

J. H. WILLIS

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*A Handbook to*

PLANTS  
IN VICTORIA

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VOLUME II

*Dicotyledons*

The first volume of the *Handbook to Plants in Victoria* covering the ferns, conifers and monocotyledons was published in 1962. It is a measure of the magnitude of the task that the preparation of Volume II took a further ten years.

Prior to his retirement from his position as Acting Government Botanist in the National Herbarium Mr James Hamlyn Willis, one of Australia's most distinguished botanists, endeared himself to botanists and field naturalists by an unending flow of scientific papers, books, identifications, lectures and advice; but he also had as his main task the complete revision and rewriting of the Flora of Victoria—the description and classification of new species, the investigation and recording of their geographical distribution, and the preparation of elaborate keys for their identification. His research work was sponsored by the Maud Gibson Gardens Trust, and publication was jointly financed by the Trust, the Melbourne University Press and the Government of Victoria.

The purpose of this book is to provide a means for readily identifying, in the field or herbarium, the various families, genera and species of vascular plants—both indigenous and naturalized—that occur within the State of Victoria. Although in key form throughout, this handbook provides much more information about individual species than keys usually provide. But it must not be regarded as the equivalent of a full-length, comprehensive flora with detailed descriptions and illustrations. This is hopefully still to come, but it will

*(continued on back flap)*

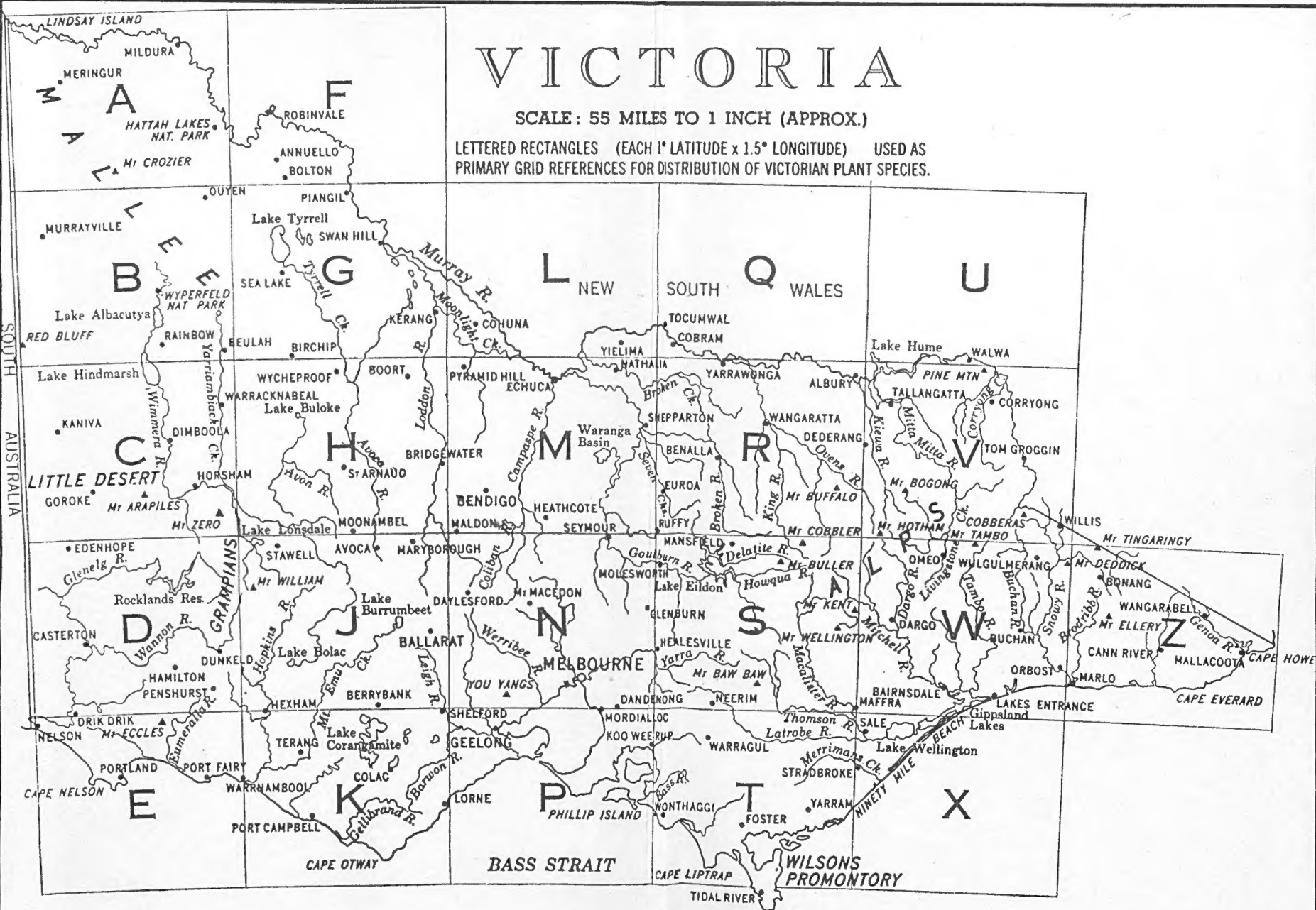




# VICTORIA

SCALE: 55 MILES TO 1 INCH (APPROX.)

LETTERED RECTANGLES (EACH 1° LATITUDE x 1.5° LONGITUDE) USED AS  
PRIMARY GRID REFERENCES FOR DISTRIBUTION OF VICTORIAN PLANT SPECIES.





**A HANDBOOK TO PLANTS IN VICTORIA**

**VOLUME II**



# A HANDBOOK TO PLANTS IN VICTORIA

JAMES H. WILLIS

*Royal Botanic Gardens, Melbourne*

VOLUME II

*Dicotyledons*



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## INTRODUCTION

THE present volume embraces all dicotyledons known to occur in Victoria, whether as indigenous or truly naturalized populations; 2290 species are currently recognized, 550 of these being introduced. Together with Volume I (second edition in May 1970), it completes a recent analytical survey of the State's vascular flora. The aim, scope and use of this handbook and the tabulation of details for species remain as already stated in the introduction to Volume I (pp. ix–xv), and the style corresponds closely.

It is regrettable that a lapse of ten years should separate Volumes I (first edition 1962) and II, but the latter includes almost  $2\frac{1}{2}$  times as many species and was more difficult to prepare. On the other hand, this delay has enabled the writer to take advantage of more recent revisional studies in such relatively large groups as *Bassia*, *Kochia*, *Fumaria*, *Sisymbrieæ*, *Rubus*, *Acacia*, *Geraniaceæ*, *Oxalis*, *Eriostemon*, *Phebalium*, *Correa*, *Malvaceæ*, *Eucalyptus*, *Solanum*, *Goodeniaceæ*, *Vittadinia* and *Senecio*. The information now presented is therefore much more complete than would have been possible several years ago.

In order to save space and so reduce costs, the format of Volume I has been modified in several ways, viz.:

### 1. *Deletion of prefixing numbers from all familial, generic and specific names*

Such numbers have little utility and, in the various keys to genera (under successive families), each genus is now given a page reference in parenthesis, instead of a number—precisely as in the artificial key to families (pp. 1–17).

### 2. *Reduction in number of references to illustrations*

It was felt that an inordinate number of pages in Volume I had been taken up by citations of illustrations, many being of very limited value. Illustrative references in Volume II have been reduced to about 4–6 per species (with an absolute maximum of 10), preferentially figures of good quality and accessible in more recent Australian works of reference. The line "*Illust.: Nil*" no longer appears under those species for which illustrative references are lacking. All of the excellent line drawings for dicotyledonous species appearing in Burbidge and Gray's *Flora of the Australian Capital Territory* (1970) are cited wherever applicable to Victoria. Since Dr N. T. Burbidge was the artist in each case, the name of her collaborator (Max Gray) has been deleted from these citations—purely for the sake of brevity. As with the places of publication for species names, so all journals, bulletins, books etc. cited as sources of pictorial matter have been abbreviated in accordance with the latest available

edition of the *World List of Scientific Periodicals* edited by W. A. Smith and F. L. Kent (the entries in which are not invariably consistent).

### 3. *Deletion of diagnoses for single species*

In Volume II there are 296 instances of genera that are either monotypic and/or represented in Victoria by single species. It had been intended, as in Volume I, to supplement the lack of key features for such species by providing a short diagnosis after the distributional data in each case. But, to save time and space, the characters used under keys to these "one-species" genera (or their families) are slightly amplified in order to make identifications quite unequivocal, while the diagnoses have been dropped.

### 4. *Distributional reference by letters instead of locality lists*

In Volume I much space had also been devoted to lists of Victorian localities under the respective species. Such space is saved in the present volume by making use of capital letters, representing the 23 rectangular areas into which the State is gridded for purposes of national mapping. Only in the case of localized or very rare species are definite localities cited.

Each lettered rectangle extends over 1° of latitude and 1° 30' of longitude, thus enclosing an area of between 5500 and 5800 square miles—e.g. A is the rectangle of Mildura and includes the far N.W. corner of the State, Port Phillip Bay is shared between rectangles N and P, while Z embraces far East Gippsland. Maps printed on the end-covers of the present volume serve to indicate the location of these lettered rectangles by reference to townships, major water-courses and lakes, so the reader ought to have no difficulty in interpreting the known range of a species within Victoria.

Should field observations bring to light any extensions in the regional distribution of a particular species, the observer is invited to communicate this additional information to the National Herbarium at South Yarra. The Herbarium is a repository for data in connection with a scheme to map the distribution of all Victorian vascular plants (native and naturalized) on a grid pattern of 10 minutes in latitude by 10 in longitude—i.e. smaller rectangles within the lettered ones, varying in area from  $\pm 102$  sq. miles in southern districts to  $\pm 108$  sq. miles in the N.W. Mallee.

When the decision was made to use grid letters (from A to Z) instead of locality names, type had already been set for the first nine families, *Casuarinaceæ* to *Olacaceæ* (pp. 19–66 in Volume II) and for eleven other genera, viz.:

*Ranunculus* (pp. 147–156)

*Bursaria* (p. 198)

\**Ononis* (p. 285)

*Trigonella* (p. 286)

*Swainsona* (pp. 301–305)

*Glycyrrhiza* (p. 306)

\**Ornithopus* (p. 307)

\**Alhagi* (p. 307)

*Desmodium* (pp. 307–308)

*Lespedeza* (p. 308)

*Brachycome* (pp. 663–676)

Rather than incur the expense of re-setting such a sizeable section of the volume (85 pp.), it was thought prudent to incorporate this text without

alteration—even if it detracted somewhat from the uniformity and balance of the work. No reference is made to the countries of origin of naturalized alien species, as was done in Volume I.

### ABBREVIATIONS

For the economy of space, certain symbols and abbreviations have been adopted, as follows:

#### General

\* (as prefixing sign)—denotes a naturalized alien group (family, genus or species).

±—more or less, approximately.

>, <—greater than, less than.

& (connecting two words or numbers)—used instead of “and” where there are joint authors, or where localities, etc. are closely connected.

*illust.* = illustrations; *vern.* = vernacular or common name; *distr.* = distribution; *diagn.* = diagnosis.

*t.* = plate; *fig.* = figure; *n.* = number; *col.* = in colour; *l.c.* = in the place cited; *opp.* = opposite to.

#### Geographical

*R.* = River; *Ck* = Creek; *Mt.*, *Mtns.* = Mount, Mountains; *Id*, *Is* = Island, Islands; *Prom.* = Promontory; *Penins.* = Peninsula.

*Vic.* = Victoria; *Tas.* = Tasmania; *S.A.* = South Australia; *W.A.* = Western Australia; *N.S.W.* = New South Wales; *Qd* = Queensland; *Cent. Aust.* = Central Australia; *N. Terr.* = Northern Territory; *A.C.T.* = Federal Capital Territory; *N.G.* = New Guinea; *N.Z.* = New Zealand; *N.Cal.* = New Caledonia; *S. Amer.* = South America; *N.Amer.* = North America; *U.S.A.* = United States of America; *S. Afr.* = South Africa; *N. Afr.* = North Africa.

#### Dimensional

*alt.* = in altitude; *diam.* = in diameter.

*ft.* = feet; *l"* = 1 inch; *cm.* = centimetre; *mm.* = millimetre.

#### Citatory

The shortening of authors' names follows current procedure in botanical works—e.g. *L.* for Carl Linnæus, *R. Br.* for Robert Brown, *Benth.* for G. Benthams, *Hook. f.* for J. D. Hooker (son of W. J. Hooker), *F. Muell.* (not “F.v.M.”) for Ferdinand von Mueller. The surnames of most modern botanists are written in full, with initials, to avoid confusion with earlier and better known authorities.

In abbreviating the titles of periodical works, a standard pattern has been adopted, viz. the forms used in the third edition of *World List of Scientific Periodicals published in the Years 1900–1950*, edited by W. A. Smith and F. L. Kent, 1952. Older works that ceased before 1900 are abbreviated in conformity with this *World List*. Minor deviations are made in a few instances; for example, the “Melbourne” has been deleted from *Vict. Nat.*, *Melb.* and



*Wild Life, Melb.* as being superfluous; extra-Australian journals, that also bear the title *Victorian Naturalist* or *Wild Life*, are not involved in the description or illustration of our State's flora.

### SHORT GLOSSARY OF LATIN EXPRESSIONS

<i>al. (alii)</i> = others	<i>nec</i> = not, nor
<i>atque</i> = and also	<i>nom. illeg. (nomen illegitimum)</i> = illegitimate name
<i>Aust. (Australiæ)</i> = of Australia	<i>nomen nudum</i> = name only (without accompanying description)
<i>auctt. (auctorum)</i> = of authors	<i>non</i> = not
<i>certe</i> = undoubtedly	<i>plur. (plures)</i> = several
<i>cum icon. (icone)</i> = together with illustration	<i>pro parte</i> in part (for part)
<i>et</i> = and	<i>sens. (sensu)</i> = in the sense of
<i>etymol. orig. (etymologice originalis)</i> = original form of spelling	<i>strict. (stricte)</i> = strictly, precisely
<i>in err. (errore)</i> = in error	<i>teste</i> = by witness of (according to)
<i>inter</i> = between	<i>ut</i> = as ( <i>ut sp.</i> = as a species)

### ACKNOWLEDGEMENTS

The section on *Mimosaceæ* (pp. 211–245 inclus.), embracing 93 species of *Acacia* and one of *Albizia*, is entirely the work of my staff colleague, Mr. A. B. Court who long ago expressed a wish to make this contribution. The key to *Acacia* is designed so that specimens may be identified in the absence of flowers and pods (although the latter are mentioned where appropriate); as in the case of eucalypts (pp. 409–444), flowering times are given for each species. Key features are more numerous and detailed than in other sections of the *Handbook*, but the extra space involved is offset by a reduction in the number of illustrations cited—rarely as many as five or six.

The writer is again heavily indebted to Miss Mary A. Todd (another Herbarium officer) who undertook the very onerous task of preparing the index—some 4870 card entries of botanical and vernacular names from which typescript was prepared directly. Miss Todd also, through constant use of the keys, kindly pointed out various omissions and discrepancies which could be rectified before the page-proof stage. Her continuing interest in the accuracy and quality of the work is deeply appreciated.

Thanks are due to other colleagues in Melbourne Herbarium for various helpful suggestions, to the heads of other herbaria for information not available in Melbourne, to the Maud Gibson Gardens Trust for generous financial assistance, to the courtesy of publisher and printer, and, above all, to the writer's understanding, co-operative wife.

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Royal Botanic Gardens,  
Melbourne, Victoria  
28th January 1972

# ARTIFICIAL KEY TO FAMILIES\*

## DICOTYLEDONEÆ

(Flowering plants with two seed-leaves)

1. Land plants or semi-aquatics, with at least the terminal leaves (when present) normally *exposed to the air* (but foliage sometimes lying flat on surface of water) 4  
 Aquatics with all leaves *permanently submerged* and divided into numerous *filiform or linear segments*, often rapidly shrivelling upon exposure to air (but the inflorescence may project above water) 2
2. Leaves *whorled*; flowers *minute*, inconspicuous 3  
 Leaves *not whorled*, petiolate; flowers conspicuous, with white or yellow petals, *regular*† (plant rooting in mud): RANUNCULACEÆ (p. 145)  
 Leaves *not whorled*, interspersed with *bladders*; flowers conspicuous, yellow, *zygomorphic and spurred* (very rare plant, floating free near water surface): LENTIBULARIACEÆ (p. 576)
3. Leaves *pinnately dissected*; flowers in a *terminal spike*; perianth *present* (*Myriophyllum*): HALORAGACEÆ (p. 467)  
 Leaves *dichotomously forked* (1-3 times); flowers *solitary*, *axillary*, *submerged*; perianth *absent*: CERATOPHYLLACEÆ (p. 157)
4. Green plants (if ever leafless when in flower, then either shrubs or twiners) 6  
 Herbs without chlorophyll, the leaves reduced to scales or absent (fruit always capsular) 5
5. Slender *twining* parasites, with *minute white regular*† flowers usually in *globoid* clusters: CUSCUTACEÆ (p. 539)  
 Stocky and *erect* terrestrial root-parasites, with *conspicuous bilabiate* flowers in *spikes*: OROBANCHACEÆ (p. 576)
6. Leafless *parasitic twiners*, soon free from soil; flowers 3-partite; fruit drupaceous (*Cassytha*): LAURACEÆ (p. 159)  
 Trees and shrubs, the needle-like or filiform branchlets jointed and grooved; leaves reduced to *whorls of minute scales* (5 or more per whorl) encircling the joints; fruit a cone: CASUARINACEÆ (p. 19)  
 Habit various, *never* parasitic twiners; leaves never minute, scale-like and in whorls of >4 7
7. Perianth 0, or of 1 whorl (sometimes falling off as an operculum), or of 2 or more  $\pm$  *similar* whorls, or the segments numerous and spirally arranged 12

\* Adapted from arrangement by A. R. Clapham, T. G. Tutin and E. F. Warburg in *Flora of the British Isles*, Cambridge (1957 ed.).

† The term "regular", here and elsewhere, signifies *actinomorphic*.

- Perianth of 2 (rarely more) *distinct* whorls, differing manifestly from each other in shape, size or colour (the calyx sometimes truncate and lobeless or deciduous at anthesis) 8
8. Petals all *united*, at least at the base, but the tubular portion sometimes short 11  
 Petals at length *free* (sometimes cohering above, but then with claws free at base) 9
9. Ovary *inferior* or partly so 75(C)  
 Ovary *superior* (but sometimes closely appressed to a narrow calyx-tube) 10
10. Carpels *and* styles quite free, or the carpels slightly united at extreme base 14(A)  
 Carpels or styles, or both, obviously *united* for the greater part, or ovary consisting of a single carpel 23 (B)
11. Ovary *superior* (but sometimes closely appressed to a narrow calyx tube) 88(D)  
 Ovary manifestly *inferior* 128(E)
12. Perianth *corolla-like* (but sometimes very small), at least the inner segments usually brightly coloured or white (sometimes operculate, or with radiating petaloid staminodia, or petals minute and gland-like) 138(F)  
 Perianth wholly greenish and *calyx-like*, or scarious, or 0 13
13. Trees or shrubs (sometimes jointed leafless parasites) 163(G)  
 Herbaceous plants 178(H)

## GROUP A

(Petals free; ovary superior; carpels and styles free or nearly so)

14. Sepals or petals more than 3 16  
 Sepals and petals each 2 or 3 15
15. Jungle climber with broad-ovate leaves: MENISPERMACEÆ (p. 158)  
 Mountain shrub or tree with aromatic oblong-lanceolate leaves: WINTERACEÆ (p. 157)  
 Small herb with opposite succulent leaves <1" long; flowers inconspicuous, mostly axillary: CRASSULACEÆ (p. 190)
16. Stamens twice as many as petals, or fewer 20  
 Stamens *numerous* (>twice the number of petals) 17
17. Herbs; stipules 0; flowers hypogynous: RANUNCULACEÆ (p. 145)  
 Herbs with stipules, or shrubs 18
18. Leaves highly *aromatic*; sepals 2-4, *united*: WINTERACEÆ (p. 157)  
 Leaves *not* aromatic; sepals 5, *free* 19
19. Flowers *hypogynous*, yellow and showy (shrubs): DILLENIACEÆ (p. 385)  
 Flowers  $\pm$  *perigynous* (if yellow, then plants herbaceous): ROSACEÆ (p. 201)
20. Shrubs or trees, never climbing 22  
 Jungle climbers with broad-ovate leaves and inconspicuous flowers: MENISPERMACEÆ (p. 158)  
 Small annual herbs; flowers very small 21

21. Non-succulent; thalamus *very long*, with up to 300 carpels (*Myosurus*):  
     RANUNCULACEÆ (p. 145)  
 More or less succulent; thalamus *short*, with 4 or 5 carpels:  
     CRASSULACEÆ (p. 190)
22. Shrubs; leaves *simple*; flowers *bisexual*, conspicuous, yellow:  
     DILLENIACEÆ (p. 385)  
 Trees; leaves *pinnate*, large; flowers *unisexual*, small; fruits winged  
 (*Ailanthus*):  
     \*SIMAROUBACEÆ (p. 341)

## GROUP B

(Petals free; ovary superior; carpels or styles, or both,  
 united, or ovary of only one carpel)

23. Flowers *zygomorphic* 67  
 Flowers *regular* or nearly so 24
24. Stamens twice as many as petals, or fewer (never >12), or petals 2 and  
 stamens 6 32  
 Stamens more than twice the number of petals, always >6, or stamens  
 and petals both numerous 25
25. Stamens free or clustered in bundles 28  
 Stamens all united below into a single tube or column 26
26. Leaves stiff, linear revolute; flowers *unisexual*; ovary 3-locular; petals  
*far exceeding* the sepals (*Ricinocarpos*):  
     EUPHORBIACEÆ (p. 344)  
 Leaves otherwise; flowers *bisexual* or, if ever *unisexual* and with 3-  
 locular ovaries, then petals hardly exceeding sepals 27
27. Leaves *bipinnate*; flowers in heads; ovary 1-locular (*Albizia*):  
     MIMOSACEÆ (p. 211)  
 Leaves *never* bipinnate; ovary 2- to many-locular:  
     MALVACEÆ (p. 373)
28. Flowers markedly *perigynous*; carpel 1, ovule 1; fruit a drupe; petals  
 conspicuous (*Prunus*):  
     ROSACEÆ (p. 201)  
 Flowers *hypogynous*, sessile, in *heads or spikes*; carpel 1, ovules several;  
 fruit a pod; petals *minute*:  
     MIMOSACEÆ (p. 211)  
 Flowers *hypogynous*, *not* in heads; carpels 3 or more; petals  $\pm$  con-  
 spicuous 29
29. Herbs (usually annual); sepals 2; styles 1 or 0:  
     PAPAVERACEÆ (p. 160)  
 Herbs, shrubs or trees; sepals 3-6; styles >1 30
30. Trees with *pinnate* foliage; flowers large, white (far eastern):  
     EUCRYPHIACEÆ (p. 391)  
 Trees, shrubs or herbs; leaves *undivided* 31
31. Leaves *succulent*,  $\pm$  glaucous, often in fascicles; flowers white or green-  
 ish; fruit a reddish drupe (*Nitraria*):  
     ZYGOPHYLLACEÆ (p. 323)  
 Leaves *not succulent*, *opposite*; flowers yellow; fruit a capsule or berry:  
     HYPERICACEÆ (p. 391)  
 Leaves  $\pm$  *leathery*, *alternate*; flowers white; fruit a black or bluish drupe  
 (eastern trees):  
     ELÆOCARPACEÆ (p. 385)
32. Herbs, without tendrils 49

- Trees or shrubs (sometimes dwarf and ericoid); if ever  $\pm$  climbing, then without any tendrils 34  
 Climbers with tendrils (eastern) 33
33. Leaves with 5 digitate leaflets; flowers *very small*, greenish:  
 VITACEÆ (p. 372)  
 Leaves simple but lobed; flowers *large*, conspicuous, with a fringed corona:  
 PASSIFLORACEÆ (p. 399)
34. Perianth-segments yellow, in several whorls of 3; leaves *spiny-toothed*:  
 \*BERBERIDACEÆ (p. 158)  
 Perianth-segments white, in 2 whorls of 4; leaves *spine-toothed* or pungent; fruit a red drupe: \*AQUIFOLIACEÆ (p. 354)  
 Perianth-segments in 2 whorls of 4-6; leaves *not* spiny-toothed 35
35. Leaves simple 39  
 Leaves pinnate 36
36. Leaflets 2, *succulent* (semi-shrubs or herbs with yellow flowers):  
 ZYGOPHYLLACEÆ (p. 323)  
 Leaflets 2 to many, *never* succulent (true woody shrubs or trees) 37
37. Tree (very rare, far eastern), not aromatic; fruit lobed,  $\pm$  10 mm. wide; seed with large fleshy aril (*Alectryon*): SAPINDACEÆ (p. 356)  
 Tree (introduced), *not* aromatic but with heavy unpleasant odour; fruit consisting of several 1-seeded, flattened, *winged* samaras (*Ailanthus*):  
 \*SIMAROUBACEÆ (p. 341)  
 Shrub, *not* aromatic; fruit a flattened monocarpellary pod with *several* seeds (*Cassia*): CÆSALPINIACEÆ (p. 245)
38. Shrubs or trees with *very aromatic* foliage; fruits not as above 38  
 Shrubs with fruit splitting into 4 *bivalved cocci*; flowers 4-partite:  
 RUTACEÆ (p. 326)  
 Trees (introduced), with pink *pilular drupes* 3-5 mm. wide; flowers 5-partite (*Schinus*): \*ANACARDIACEÆ (p. 359)
39. Stamens *united* in an urn-shaped tube around the pistil; flowers fragrant; fruit berry-like, purplish, with 1-2 seeds (*Hymenanthera*):  
 VIOLACEÆ (p. 396)  
 Stamens *free* or slightly fused at the base; fruit not berry-like (sometimes drupaceous) 40
40. Dwarf ericoid shrubs of saline ground; leaves opposite, connate at base, usually greyish; ovary 1-locular, narrow, the fruit enclosed by persistent ribbed calyx: FRANKENIACEÆ (p. 394)  
 Differing in most of these features 41
41. Stamens *opposite* the petals or twice as many 44  
 Stamens *equal* in number to and *alternating* with petals 42
42. Petals <3 mm. long; style with 3 *stigmatic lobes*; seeds with large *orange* aril (glabrous jungle climber or slender tree):  
 CELASTRACEÆ (p. 353)  
 Petals >3mm. long; style *undivided*; seeds without an aril 43
43. Flowers 5-partite; fruit a 2- or 3-valved *capsule*:  
 PITTOSPORACEÆ (p. 196)  
 Flowers 4- or 5-partite; fruit splitting into 1- or 2-seeded *cocci*, or (rarely) drupaceous: RUTACEÆ (p. 326)

44. Leaves *crenate* or *lobed*, broad,  $\pm$  aromatic; fruit splitting into 5 long-beaked (or awned) 1-seeded fruitlets: GERANIACEÆ (p. 313)  
Leaves *entire* or almost so, or, if ever toothed, then the fruits *not* splitting into appendaged particles 45
45. Rather *ericoid* semi-shrubs, glabrous or with simple hairs; flowers showy, pink or purplish (rarely white); anthers dark, erect, opening by *terminal pores*; fruit a 2-valved capsule: TREMANDRACEÆ (p. 195)  
Non-ericoid shrubs, the anthers splitting lengthwise, or, if ericoid or porantherous, then the fruit not a 2-valved capsule and the indumentum of stellate hairs 46
46. Stamens alternating with staminodia; ovary 5-locular; fruit dry, capsular or splitting into cocci: STERCULIACEÆ (p. 382)  
Half (or more) of the stamens sterile; ovary 1- to partially 3-locular; fruit a green drupe; leaves linear, glabrous (eastern and rare): OLACACEÆ (p. 66)  
Stamens *all perfect*, no staminodia present 47
47. Aromatic shrubs; fruit splitting into 1- or 2-seeded cocci: RUTACEÆ (p. 326)  
Odourless shrubs; fruit *drupaceous* 48
48. Leaves *narrow*, succulent, *entire*; fruit reddish; putamen (stone) long and pitted (*Nitraria*): ZYGOPHYLLACEÆ (p. 323)  
Leaves *broad*, *serrate*; fruit black; putamen short, without pits (*Rhamnus*): RHAMNACEÆ (p. 360)
49. Sepals 2; petals 5; leaves usually  $\pm$  succulent: PORTULACACEÆ (p. 127)  
Sepals  $>2$  and equal in number to petals 50
50. Sepals and petals each normally 6; flowers *perigynous*, with a *long-tubular* receptacle (plants of wet places; corolla purplish): LYTHRACEÆ (p. 461)  
Sepals and petals normally  $<6$ ; flowers *hypogynous* or, if ever  $\pm$  *perigynous*, the receptacle flat to cup-shaped 51
51. Leaves *alternate* or all radical 58  
Leaves *opposite* or in whorls 52
52. Leaf-blades peltate or crescentic, fringed with *viscid glandular hairs*: DROSERACEÆ (p. 188)  
Leaf-blades not as above 53
53. Leaves *entire* 55  
Leaves compound or lobed 54
54. Leaves paripinnate; petals yellow; fruit hard and spiny (*Tribulus*): ZYGOPHYLLACEÆ (p. 323)  
Differing in all these features: GERANIACEÆ (p. 313)
55. Stipules present, *not* scarious; prostrate plants on mud (sometimes submerged): ELATINACEÆ (p. 394)  
Stipules present, *scarious*; land plants 56  
Stipules *absent*, but leaf-bases may be connate 57
56. Flowers *bisexual*; ovary 1-locular: CARYOPHYLLACEÆ (p. 130)  
Flowers *unisexual*; ovary 3-locular: EUPHORBIACEÆ (p. 344)



57. Style *long*, simple (but stigmas free); ovary 1-locular; placentation parietal (ericoid, salt-loving plants): FRANKENIACEÆ (p. 394)  
 Style *short*, simple (stigma solitary); ovary 2-locular; flowers 4-partite (*Ammania*): LYTHRACEÆ (p. 461)  
 Styles *free*; placentation free-central: CARYOPHYLLACEÆ (p. 130)
58. Leaves with 3-4 obcordate or cuneiform, clover-like leaflets: OXALIDACEÆ (p. 319)  
 Leaves without terminal clover-like leaflets 59
59. Leaves covered with viscid glandular hairs (insectivorous): DROSERACEÆ (p. 188)  
 Leaves never as above 60
60. Sepals and petals each 2-3; flowers very small, pink or greenish, numerous in terminal panicles; ovary 1-locular, 1-seeded: POLYGONACEÆ (p. 70)  
 Sepals and petals each 4-5 61
61. Both floral whorls green and sepal-like (calyx and epicalyx); flowers small, with conspicuous hollow receptacles; leaves palmately lobed (*Alchemilla* and *Aphanes*): ROSACEÆ (p. 201)  
 Petals  $\pm$  brightly coloured or white, never sepal-like 62
62. Sepals and petals each 4; stamens 6 (rarely 4): CRUCIFERÆ (p. 164)  
 Sepals and petals 5; stamens 5 or 10 63
63. Calyx *funnel-shaped* or obconic, *scarious* and enclosing the fruit (*Limonium*): PLUMBAGINACEÆ (p. 516)  
 Sepals *free*, *not scarious* (or scarious only along margins), not enclosing the fruit 64
64. Flowers *unisexual*; petals minute, white; ovary 3-locular; anthers opening *by pores*: EUPHORBIACEÆ (p. 344)  
 Flowers *bisexual*; petals conspicuous, often coloured; ovary 2- to 5-locular; anthers opening *lengthwise* 65
65. Leaves broad, *toothed* or *dissected*, long-petiolate, stipulate; fruit-particles with long *beaks* or *awns* (the persistent segments of style): GERANIACEÆ (p. 313)  
 Leaves *entire*, linear to spatulate, ex-stipulate; fruit *without* appendages 66
66. Flowers *long-pedicellate*, in loose corymbs or panicles; petals *broad*, free or cohering only at base; fruit *capsular*: LINACEÆ (p. 322)  
 Flowers almost *sessile*, in spikes or racemes (sometimes solitary); petals *narrow*, fused for the greater part in a long tube, but with free claws; fruit splitting into 2-5 *one-seeded cocci*: STACKHOUSIACEÆ (p. 354)
67. Flowers neither saccate nor spurred 70  
 Flowers saccate or spurred at the base 68
68. Leaves *simple*; stamens 5, *connivent* round the style (herbs, often with radical leaves): VIOLACEÆ (p. 396)  
 Leaves *pinnate* or much-divided; stamens 2 or 4, *not connivent* 69
69. Small brittle herbs with much-divided foliage; stamens 2; fruit a small capsule or 1-seeded nutlet: \*FUMARIACEÆ (p. 162)

- Shrubs with pinnate leaves; stamens 4; fruit a 4-lobed bladdery capsule (at least 1" long): \*MELIANTHACEÆ (p. 356)
70. Flowers very zygomorphic and conspicuously *keeled*; petals  $\pm$  erect 71  
Flowers less zygomorphic, *not* keeled; petals spreading 72
71. Petals 5, the uppermost large and modified to form a standard; anthers opening by *slits*; ovary 1-locular: PAPILIONACEÆ (p. 248)  
Petals 3, one or more sepals often large and petaloid; anthers opening by *pores*; ovary 2-locular and 2-seeded: POLYGALACEÆ (p. 341)
72. Flowers in *cymes* (often umbel-like); ovary 5-lobed, with a *long beak*: GERANIACEÆ (p. 313)  
Flowers in racemes *or* few and terminal; ovary entire or 2-lobed, rarely beaked 73
73. Shrubs; leaves pinnate; petals bright yellow; stamens 10 (*Cassia*): CÆSALPINIACEÆ (p. 245)  
Herbs, *or* leaves never pinnate; stamens never 10 74
74. Petals *fimbriate* or lobed, white or greenish; stamens >6: \*RESEDACEÆ (p. 187)  
Petals entire or emarginate; stamens 6, surrounding the ovary (odorous herbs): CRUCIFERÆ (p. 164)  
Petals entire, *blue* (15-20 mm. long); stamens 5, the anthers finger-like and on one side of ovary (*Cheiranthra*): PITTOSPORACEÆ (p. 196)

## GROUP C

(Petals free; ovary inferior or partly so)

75. Apparent petals *numerous*, but really consisting of coloured petaloid staminodia (succulents): AIZOACEÆ (p. 121)  
Petals 2-9 76
76. Stamens 10 or fewer 79  
Stamens numerous (>10) 77
77. Leaves *ex-stipulate*, *entire*, often small and ericoid, always aromatic (with oil dots): MYRTACEÆ (p. 406)  
Leaves stipulate *or* divided, if aromatic then without oil dots 78
78. Leaves *alternate*: ROSACEÆ (p. 201)  
Leaves *opposite* and trifoliolate: BAUERACEÆ (p. 193)
79. Normally aquatic, with submerged leaves pinnately divided into filiform segments; flowers in terminal spikes projecting above the surface of water, often unisexual (*Myriophyllum*): HALORAGACEÆ (p. 467)  
Land plants *or*, if aquatic, the leaves not pinnate *and* flowers bisexual 80
80. Herbs 85  
Trees or shrubs (sometimes climbing) 81
81. Flowers *not* umbellate (but sometimes clustered), often coloured and showy 83  
Flowers in *umbels*, usually small and greenish 82
82. Fruit *dry*; leaves *not* revolute, rarely 1" long: UMBELLIFERÆ (p. 476)  
Fruit succulent and berry-like (leaves being pinnate) *or*, if dry, then the simple leaves linear, revolute and >1" long: ARALIACEÆ (p. 474)

83. Branch-parasites; leaves *entire*, mostly opposite; fruit succulent:  
     LORANTHACEÆ (p. 66)  
     Spiny terrestrial shrubs; leaves *palmately lobed*, alternate; fruit succulent:  
     \*GROSSULARIACEÆ (p. 194)  
     Neither parasitic *nor* spiny; fruits *dry*, capsular or 1-seeded 84
84. Leaves *entire*, *aromatic*; sepals 5,  $\pm$  united: MYRTACEÆ (p. 406)  
     Leaves *serrated*, *odourless*; sepals 4, *free*:  
     HALORAGACEÆ (p. 467)  
     Leaves *trifoliolate*, *odourless*; sepals  $>5$ , often nearly free (wiry scrambling shrubs):  
     BAUERACEÆ (p. 193)
85. Perianth whorls *green and sepaloid* (calyx and/or epicalyx, the petals absent), 4 barbed spines or numerous unequal prickles often crowning the fruit; flowers *spicate* or in heads, clusters or corymbs (the last rarely):  
     ROSACEÆ (p. 201)  
     Inner perianth whorl *always petaloid*, no epicalyx or spines present 86
86. Flowers in *heads or umbels*; petals 5 (styles normally 2):  
     UMBELLIFERÆ (p. 476)  
     Flowers *never* in heads or umbels 87
87. Style *single*, with lobed stigma; ovary *elongated*; seeds numerous; petals *always conspicuous*:  
     ONAGRACEÆ (p. 462)  
     Styles 2-4; ovary *short and broad*; seeds 1-4; petals *often minute*:  
     HALORAGACEÆ (p. 467)

## GROUP D

(Petals united; ovary superior)

88. Stamens very numerous, far exceeding the *minute, regular* perianth; flowers in dense *heads or spikes* (shrubs and trees):  
     MIMOSACEÆ (p. 211)  
     Stamens numerous; sepals *petaloid, zygomorphic*, longer than corolla; flowers showy, in large racemes (*Delphinium*):  
     RANUNCULACEÆ (p. 145)  
     Stamens 10 or less 89
89. Stamens  $<6$  (as many as or fewer than petals); staminodes sometimes present 92  
     Stamens 8-10 (twice as many as petals), *free*; flowers *regular* 91  
     Stamens 6-10, sometimes united in a tube; flowers strongly *zygomorphic* 90
90. Petals 5 (the uppermost large); stamens 10; leaves often divided:  
     PAPILIONACEÆ (p. 248)  
     Petals 3 (sepals petaloid); stamens 6-8; leaves *entire*:  
     POLYGALACEÆ (p. 341)
91. Leaves *opposite, broad*, stellate-hairy; fruit splitting into four 1- to 2-seeded cocci (*Correa*):  
     RUTACEÆ (p. 326)  
     Leaves alternate or small and ericoid, never stellate-hairy; fruit capsular, many-seeded:  
     ERICACEÆ (p. 493)
92. Flowers *blue*, 5-partite, in hemispherical *bracteate heads* terminating slender naked peduncles (leaves basal, silky-hairy):  
     BRUNONIACEÆ (p. 645)

- Flowers not in heads on naked scapes *or*, if so, then regularly 4-partite and never blue 93
93. Sepals 2; petals 5; flowers *regular*: PORTULACACEÆ (p. 127)  
 Sepals >2 *or*, if 2, then the flowers zygomorphic (2 sepal-like bracts may sometimes occur outside the calyx) 94
94. Ovary never 4-lobed 97  
 Ovary deeply 4-lobed, with 1 ovule in each lobe 95
95. Leaves *alternate*, often bristly; stems not 4-angled; corolla *regular*:  
 BORAGINACEÆ (p. 530)  
 Leaves *opposite*; stems usually 4-angled; corolla often *zygomorphic* 96
96. Corolla  $\pm$  *regular*, 5-cleft: VERBENACEÆ (p. 579)  
 Corolla zygomorphic *or* almost equally 4-cleft (plants commonly aromatic): LABIATÆ (p. 581)
97. Flowers *regular* (or with nearly equal corolla-lobes) 105  
 Flowers *zygomorphic* 98
98. Insectivorous bog plant with spurred corolla; leaves either all radical *or* cleft into filiform segments; ovary 1-locular; ovules numerous on a free-central placenta: LENTIBULARIACEÆ (p. 576)  
 Not insectivorous; if with spurred corolla, then leaves neither all radical nor divided into filiform lobes; ovary 2-locular 99
99. Ovules usually numerous; seeds sometimes fattened or winged 101  
 Ovules 4; seeds never flat 100
100. Fruit a *drupe* with 4-locular putamen (stone); leaves often *alternate*:  
 MYOPORACEÆ (p. 598)  
 Fruit *dry*, splitting into 2 or 4 fruitlets; leaves always *opposite*:  
 VERBENACEÆ (p. 579)
101. Stamens 5; flowers few, in a forked inflorescence; petals *winged*; stigma with *cup-like indusium* (*Velleia*): GOODENIACEÆ (p. 633)  
 Stamens 5; flowers numerous, in terminal spikes *or* racemes; petals *without wings*; *no stigmatic indusium* (*Verbascum*):  
 SCROPHULARIACEÆ (p. 559)  
 Stamens 4 or 2 102
102. Leaves *pinnate*; fruit capsular; seeds with wide hyaline wings (climber of shaded gullies): BIGNONIACEÆ (p. 578)  
 Leaves *simple* (but sometimes deeply toothed) 103
103. Fruit *indehiscent*, *berry-like* (creeping hairy epiphyte on tree-ferns, etc., in shaded eastern gullies): GESNERIACEÆ (p. 575)  
 Fruit *dry*, *capsular* (plants not creeping) 104
104. Ovary 2-locular; fruit <4" long, without long horns; seeds albuminous, *without jaculators*: SCROPHULARIACEÆ (p. 559)  
 As for the last, but seeds lacking albumen, compressed, and *expelled by hooked processes* on funicle (large rhubarb-like garden escape *or* low herb of far E. Victoria): ACANTHACEÆ (p. 575)  
 Ovary 1-locular; fruit >4" long, with slender beak that splits into 2 long incurved horns (broad-leaved annual):  
 \*MARTYNIACEÆ (p. 577)
105. Stamens *equal* in number to corolla lobes 111  
 Stamens *fewer* than corolla lobes 106

106. Non-climbing plant; leaves simple 108  
 Glabrous climbers with pinnate leaves 107
107. Leaflets 3; stamens 2; fruit a berry (*Jasminum*):  
 OLEACEÆ (p. 517)  
 Leaflets 5-9; stamens 4; fruit a large capsule with winged seeds:  
 BIGNONIACEÆ (p. 578)
108. Epiphyte of jungles and fern gullies; leaves toothed, softly hairy; fruit  
 a pendent *berry*, about 1" long: GESNERIACEÆ (p. 575)  
 Small tree of tidal mud-flats; leaves entire, leathery; fruit a fleshy 2-  
 valved capsule 1" or more long (*Avicennia*):  
 VERBENACEÆ (p. 579)
- Neither epiphytic with large berries *nor* a coastal tree (mangrove) with  
 large fleshy capsules 109
109. Herbs; fruits capsular, with numerous seeds; stamens 2 or 4 [*Hebe* is  
 shrubby, but the flowers are slightly zygomorphic]:  
 SCROPHULARIACEÆ (p. 559)
- Shrubs with capsular or baccate, many-sided fruits; stamens 4 (anthers  
 may be only 1-locular): SOLANACEÆ (p. 545)
- Shrubs or trees; fruits *drupaceous*; seeds 1-4 per fruit 110
110. Leaves *opposite*; flowers small, *greenish*; stamens 2:  
 OLEACEÆ (p. 517)  
 Leaves *alternate*; flowers conspicuous, *white*; stamens 4:  
 MYOPORACEÆ (p. 598)
111. Leaves *alternate*, or all radical 116  
 Leaves *opposite* 112
112. Carpels united; style without any ring below stigma (non-lactiferous  
 plants) 114  
 Carpels 2, free; style 1, expanded into a ring below the stigma; plants  
 usually with milky latex 113
113. Petals united to a *lobed corona*; pollen grains fused in a mass (pol-  
 linium): ASCLEPIADACEÆ (p. 528)  
 Petals *without any corona*; pollen grains free:  
 APOCYNACEÆ (p. 526)
114. Stamens *opposite* the petals; ovary 1-locular, with *free-central* placenta-  
 tion: PRIMULACEÆ (p. 513)  
 Stamens *alternating* with petals; placentation *never free-central* 115
115. Ovary 1-locular, with parietal placentation (herbs; leaves *exstipulate*):  
 GENTIANACEÆ (p. 521)  
 Ovary 2-locular (herbs or shrubs, with *stipulate* leaves):  
 LOGANIACEÆ (p. 518)
116. Sepals, petals and stamens 4 (rosette herbs, with flowers in spikes):  
 PLANTAGINACEÆ (p. 603)  
 Sepals, petals and stamens 5 117
117. Climbers, corolla > 15 mm. long, the lobes *imbricate*; stamens *free* from  
 corolla: PITTOSPORACEÆ (p. 196)  
 Rarely climbing or, if so, then the petals contorted *or* valvate and  
 stamens epipetalous 118
118. Leaves *ericoid*, hard, rigid, often pungent, minutely stalked or sessile

- and sheathing, with usually distinct *parallel venation* beneath; style and stigma undivided; fruit either drupaceous or a 5-valved capsule (ovary also 5-locular): EPACRIDACEÆ (p. 495)
- Leaves rarely ericoid, never rigid and pungent *or* with parallel veins; style or stigma sometimes forked; fruit succulent or capsular and, if opening by 5 valves (rarely), then the ovary never 5-locular 119
119. Flowers in *scorpioid* cymes resembling 1-sided spikes; calyx *dry*, with persistent *petaloid limb*; fruit a 1-seeded capsule: PLUMBAGINACEÆ (p. 516)
- Flowers *not* in cymes; calyx neither *dry nor* petaloid; fruit several-seeded 120
120. Stigmas 3 and ovary 3-locular; leaves *pinnately divided* (except in *Collomia*): \*POLEMONIACEÆ (p. 539)
- Stigmas 2 or 1; leaves *not* pinnate 121
121. Stamens *alternating* with petals; ovary 1- to 10-locular, the placentation never free-central 123
- Stamens *opposite* the petals; ovary 1-locular, the placentation basal or free-central 122
122. Herbs with *capsular* fruits: PRIMULACEÆ (p. 513)
- Trees with *drupaceous* fruits and broad lustrous leaves: MYRSINACEÆ (p. 513)
123. Yellow-flowered marsh plants; leaves cordate, *long-petiolate*; fruit with *numerous* seeds: MENYANTHACEÆ (p. 525)
- Not as above or, if leaves long-petiolate, then seeds very few 124
124. Twining or prostrate (sometimes very small shrubs); seeds 2 or 4 per fruit; corolla regular: CONVULVULACEÆ (p. 541)
- Never twining; seeds *numerous* 125
125. Sepals 3; stigma with an *indusial cup*; yellow-flowered alpine rosette plant (*Velleia*): GOODENIACEÆ (p. 633)
- Sepals 5 (or calyx 5-toothed); *no* stigmatic indusium 126
126. Flowers numerous, in long terminal *spikes or racemes*; 3 or all stamens with hairy filaments (*Verbascum*): SCROPHULARIACEÆ (p. 559)
- Flowers solitary or in cymes (sometimes scorpioid) *or* loose corymbs 127
127. Corolla-tube rather long (or, if short, the anthers connivent); style *simple*: SOLANACEÆ (p. 545)
- Corolla-tube very short; styles 3-5; anthers *free*: LINACEÆ (p. 322)

## GROUP E

(Petals united; ovary inferior)

128. Flowers *never* in heads (if clustered, then without any common involucre) 131
- Flowers *in heads*, surrounded by an involucre of bracts or floral leaves 129
129. Anthers *cohering in a tube* around the style (free only in a few genera with unisexual heads); calyx absent, or represented by a pappus of scales or bristles: COMPOSITÆ (p. 650)
- Anthers *free*; calyx well-developed 130
130. Heads *large* (1" wide or more); tall, prickly, thistle-like biennials, or



- annuals with dissected foliage; flowers with an *epicalyx* of united *bracteoles*: \*DIPSACACEÆ (p. 621)
- Heads <1" wide; plants neither prickly *nor* with dissected leaves; *no epicalyx* present: RUBIACEÆ (p. 607)
131. Anthers 5, *coherent in a tube* around the style; flowers zygomorphic, blue or white: LOBELIACEÆ (p. 628)
- Anthers 2, *fused with the style to form a column* which is often irritable; flowers very zygomorphic, one petal modified (the labellum):
- STYLIDIACEÆ (p. 646)
- Anthers *free*; flowers regular or otherwise 132
132. Herbs with tender, broad, cordate leaves; *climbing by tendrils*; flowers regular: CUCURBITACEÆ (p. 622)
- Semi-shrubs *parasitic on trees* (leaves opposite, calyx cupulate):
- LORANTHACEÆ (p. 66)
- Herbs, shrubs or woody climbers, but non-parasitic *and* without tendrils 133
133. Flowers bilabiate or fan-shaped, often winged; style with an indusium or "pollen cup" below the stigma: GOODENIACEÆ (p. 633)
- Flowers not as above; no stigmatic indusium present 134
134. Leaves alternate 136
- Leaves opposite 135
135. Leaves entire, *stipulate* (sometimes whorled); stamens 4 or, if more, the flowers unisexual: RUBIACEÆ (p. 607)
- Leaves pinnate or the stamens 5; flowers bisexual:
- CAPRIFOLIACEÆ (p. 618)
- Leaves entire, *exstipulate*; stamens 1-3 (small annual herbs with minute flowers): \*VALERIANACEÆ (p. 620)
136. Creeping semi-shrub of shaded subalpine gullies; flowers *axillary*; corolla urceolate, greenish (*Wittsteinia*):
- EPACRIDACEÆ (p. 495)
- Herbs; flowers terminal or in racemes, white or blue 137
137. Stamens *opposite* the white corolla lobes; stigma capitate; ovary 1-locular (*Samolus*): PRIMULACEÆ (p. 513)
- Stamens *alternating* with (usually) blue corolla lobes; stigmas 2-5, corresponding with the ovarian loculi: CAMPANULACEÆ (p. 624)

## GROUP F

(Perianth entirely petaloid, or in several similar series with the inner petaloid)

138. Stamens 12 or fewer 144
- Stamens numerous 139
139. Aquatic herb with *floating peltate leaves* and purple flowers (north-eastern and rare): CABOMBACEÆ (p. 145)
- Terrestrial, sometimes succulent plants with  $\pm$  *inferior* ovaries and often with very numerous perianth segments or *petaloid staminodia* 140
- Leaves neither floating and peltate *nor* succulent; ovary quite *superior* (flowers often unisexual) 142

140. Jungle tree with broad leaves; flowers *operculate*, scented; staminodia broad, petaloid, white (carpels numerous, immersed):  
EUPOMATIACEÆ (p. 158)  
Succulent plants (leaves succulent or absent); flowers *not* operculate, rarely odorous: 141
141. Leaves always *present*; perianth tubular, 4- or 5-lobed, often with numerous *petaloid staminodia*; ovary 5- to many-locular:  
AIZOACEÆ (p. 121)  
Leaves absent or early deciduous (the branches flattened and functioning as leaves); perianth multiserial; stamens numerous, *without* staminodia; ovary 1-locular: \*CACTACEÆ (p. 399)
142. Carpels *numerous, free* (rarely partly united, and then the narrow, white perianth segments >5): RANUNCULACEÆ (p. 145)  
Carpels 5, *almost free*; sepals 5, united, petaloid (petals absent); an eastern tree (*Brachychiton*): STERCULIACEÆ (p. 382)  
Carpels *united*; perianth segments 3-6 143
143. Herbs; petals usually 4, *large, conspicuous*; sepals 2, falling as the flower opens; carpels 2, or 4 to many: PAPAVERACEÆ (p. 160)  
Shrubs; perianth segments *small*, 3-6; carpels and loculi of ovary both 3: EUPHORBIACEÆ (p. 344)
144. Ovary *inferior*, or becoming so after anthesis 155  
Ovary *superior* 145
145. Perianth *strongly zygomorphic*, spurred or saccate at base; stamens 2, each with 3 anther-bearing branches; leaves *much divided* (herbs, with 2 bract-like sepals that are soon shed): \*FUMARIACEÆ (p. 162)  
Perianth *regular* or, if slightly zygomorphic, then neither spurred nor with divided leaves 146
146. Herbs 152  
Shrubs or trees 147
147. Perianth *long-tubular*, 4-lobed; stamens 2 (leaves often opposite and flowers often in heads): THYMELÆACEÆ (p. 400)  
Perianth *not* or only slightly tubular; stamens >2 148
148. Leaves *opposite*; flowers *unisexual* (aromatic trees of forest gullies):  
MONIMIACEÆ (p. 158)  
Leaves *alternate* or radical; flowers *bisexual* (seldom aromatic, and then stellate-hairy shrubs) 149
149. Perianth segments 4; stamens 4 (often fused with segments):  
PROTEACEÆ (p. 32)  
Perianth segments and free stamens >4 150
150. Glabrous shrubs with toothed leaves and yellow flowers in drooping racemes: \*BERBERIDACEÆ (p. 158)  
Hairy or stellate-tomentose shrubs with almost entire leaves and upright flowers 151
151. Glabrous tree or shrub; leaves entire or 0 SANTALACEÆ (p. 58)  
Flowers *yellow*; stamens 10: RUTACEÆ (p. 326)  
Flowers *white, pink or mauve*; stamens 5: STERCULIACEÆ (p. 382)
152. Perianth segments 4, *united* for the most part, *non-glandular*; stamens 2 (leaves often opposite): THYMELÆACEÆ (p. 400)

- Perianth segments 5, *united, glandular-hairy*; stamens 1-4:  
 NYCTAGINACEÆ (p. 119)
- Perianth segments 5, *free, non-glandular* 153
153. Stipules *present*, sheathing and *scarious*; inflorescence *spicate*:  
 POLYGONACEÆ (p. 70)
- Exstipulate; flowers in long *racemes*: PHYTOLACCACEÆ (p. 120)
- Exstipulate; flowers solitary or in axillary clusters 154
154. Thalamus *very long*, with *numerous* carpels (annual)  
 RANUNCULACEÆ (p. 145)
- Thalamus *short*; carpels *few* (succulent perennial):  
 AIZOACEÆ (p. 121)
155. Herbs 158
- Shrubs or trees 156
156. Anthers *cohering in a tube* around the style, which has 2 arms (flowers  
 always sessile in bracteate heads): COMPOSITÆ (p. 650)
- Stamens entirely *free*; style *undivided* (flowers rarely in heads) 157
157. Aromatic,  $\pm$  *ericoid* shrubs; fruit *dry*: MYRTACEÆ (p. 406)
- Non-aromatic shrubs or trees (leaves sometimes reduced and scale-  
 like); fruit *drupaceous*: SANTALACEÆ (p. 58)
158. Leaves *in whorls* of 4 or more (except in *Asperula gemella*, with slender,  
 flaccid, dichotomously branched stems): RUBIACEÆ (p. 607)
- Leaves *not in whorls* 159
159. Flowers *not* in true heads, but sometimes shortly stalked in compact  
 umbels 161
- Flowers sessile, *in heads* surrounded by a common involucre 160
160. Stamens *free*; flowers *bisexual*: \*DIPSACACEÆ (p. 621)
- Anthers cohering in a tube around the style, or the flowers unisexual:  
 COMPOSITÆ (p. 650)
161. Flowers *in umbels*, without any perianth tube; fruit of 2 mericarps  
 (stamens 5): UMBELLIFERÆ (p. 476)
- Flowers *not* in umbels, with *distinct perianth tube*; fruit nut-like 162
162. Small annual; flowers in cymes; leaves *opposite*; stamens 1-3;  
 \*VALERIANACEÆ (p. 620)
- Perennial (rare); flowers axillary; leaves *alternate*; stamens 5 (*Thesium*):  
 SANTALACEÆ (p. 58)

## GROUP G

(Trees or shrubs; perianth sepaloid, or 0)

163. Parasitic on trunk or branches of trees; leaves opposite, oblong, entire,  
 thickish, or absent: LORANTHACEÆ (p. 66)
- Climbers, rooted in the soil 164
- Neither aerial parasites nor climbers 165
164. Climbing by tendrils; leaves with 5 leaflets: VITACEÆ (p. 372)
- Climbing by adventitious roots; leaves simple (\**Hedera*):  
 ARALIACEÆ (p. 474)
165. Forest-gully trees with large, glabrous, opposite leaves; flowers uni-  
 sexual, the males with numerous stamens, females with 10-20 free

- carpels which form a succulent, yellow, mulberry-like fruit (*Hedycarya*):  
MONIMIACEÆ (p. 158) 166
- Differing in most of these features 166
166. Leaves with persistent membranous stipules *ensheathing the stem*, or absent; style-arms 3; fruit a small, dark, shining,  $\pm$  trigonous nut (wiry shrubs):  
POLYGONACEÆ (p. 70)
- Leaves exstipulate, or stipules not sheathing and often soon deciduous (if leaves absent, then style-arms 2); fruit not simultaneously nut-like, dark and trigonous 167
167. Flowers numerous, unisexual, all in *dense silky catkins* and each in the axil of a bract; habit deciduous (willows and poplars):  
\*SALICACEÆ (p. 23)
- Flowers numerous, minute, unisexual, all completely *hidden in a hollow fleshy receptacle* (called a "fig" at maturity); evergreen jungle tree with rough leaves (like sand-paper), or an ornamental town tree with large smooth leaves:  
MORACEÆ (p. 29)
- Flowers neither all in catkins *nor* enclosed in a receptacle 168
168. Ovary *superior* 173  
Ovary *inferior* 169
169. Perianth non-operculate; stamens *few* (5 or less) 171  
Perianth falling away as an operculum; stamens *very numerous* and conspicuous 170
170. Foliage *odourless*; inner stamens sterile, *broad and petaloid*:  
EUPOMATIACEÆ (p. 158)
- Foliage *aromatic*; inner stamens not petaloid (*Eucalyptus*):  
MYRTACEÆ (p. 406)
171. Tall tree of forest gullies (or plantations); flowers *unisexual*, the females sessile (either solitary or 3 together) in a scaly 4-valved or cup-shaped *involucre*:  
FAGACEÆ (p. 26)
- Shrubs to small trees; flowers usually *bisexual*, *never* grouped within a common involucre 172
172. Leaves either glabrous and opposite, or reduced and scale-like; fruit a *drupe or nut*:  
SANTALACEÆ (p. 58)
- Leaves  $\pm$  hairy, *alternate*; fruit splitting into 3 one-seeded cocci:  
RHAMNACEÆ (p. 360)
173. Ovary 1-locular; seeds several; stamens very numerous, far exceeding the perianth:  
MIMOSACEÆ (p. 211)
- Ovary 1-locular and 1-ovulate; stamens 5 or less 174
- Ovary 2-locular and 2-seeded; stamens 8; fruit with 2 wings (trees with opposite lobed leaves):  
\*ACERACEÆ (p. 360)
- Ovary mostly 3-locular; seeds 3-6; stamens few (flowers commonly unisexual, style undivided or 2- to several-lobed) 176
- Ovary of 4-30 carpels which secede from a central column; stamens 8-60 (flowers unisexual):  
GYROSTEMONACEÆ (p. 120)
174. Style simple, very short (leaves small and soon discarded, or reduced to scales):  
SANTALACEÆ (p. 58)
- Styles 2 (leaves usually normal and persistent, often succulent) 175
175. Trees more than 10 ft. high; leaves broad, often scabrid, stipulate a

- first; fruit drupaceous *or* winged: ULMACEÆ (p. 27)
- Shrubs, rarely attaining 6 ft., often halophytic; leaves commonly *succulent*, sometimes very small or absent (in the glassworts), neither *scabrid* *nor* stipulate; fruit dry, but sometimes enclosed in an enlarged, succulent or winged perianth: CHENOPODIACEÆ (p. 80)
176. Fruit *dry*, with 3 sharp *angles* *or* *wings*, each loculus with 2 seeds (glabrous viscid shrubs): SAPINDACEÆ (p. 356)
- Fruit a *black drupe* with 3 bony nutlets (glabrous maritime shrub—*\*Rhamnus*): RHAMNACEÆ (p. 360)
- Fruit neither winged, angled *nor* drupaceous 177
177. Fruit capsular, opening readily into 3 *bivalved cocci* (seed arils never large and red): EUPHORBIACEÆ (p. 344)
- Fruit of 1-4 persistent, tardily dehiscent, 1-seeded lobes; seeds with a large scarlet aril (Mallee tree with narrow, grey-green leaves to 5" long—*Heterodendron*): SAPINDACEÆ (p. 356)

## GROUP H

(Herbs; perianth sepaloid, or 0)

178. Water plant; leaves simple, opposite, <1" long; flowers minute, single in the axils, *without perianth*; fruit flattened, 4-lobed: CALLITRICHACEÆ (p. 472)
- Land plants; if flowers ever minute and borne singly in leaf-axils, then *perianth present* 179
179. Flowers in simple or compound *umbels*; leaves often compound; fruit of 2 mericarps (one of them sometimes abortive): UMBELLIFERÆ (p. 476)
- Flowers *never* umbellate; fruit not of 2 mericarps (but sometimes a short pod separating into 2 hard nutlets) 180
180. Leaves *compound* (pinnate or palmate), *stipulate*, *odourless*; flowers in heads, clusters or corymbs: ROSACEÆ (p. 201)
- Leaves deeply *dissected*, *exstipulate*, *strong-smelling*; flowers in racemes (*\*Coronopus*): CRUCIFERÆ (p. 164)
- Leaves simple *or* 0 (sometimes deeply lobed, and then either odourless *or* with flowers in heads) 181
181. Inflorescence consisting of several male flowers (each of 1 stamen on a jointed pedicel) and 1 female flower which is reduced to a stalked 3-locular ovary; all the flowers grouped in a common involucre (*cyathium*) having 4 or 5 crescentic or rounded glands, the cyathia themselves forming a compound inflorescence; plants with copious *milky latex* (*Euphorbia*): EUPHORBIACEÆ (p. 344)
- Inflorescence of 1 to several *heads* of minute sessile flowers surrounded by involucre bracts (heads sometimes unisexual, and then the females in lower leaf-axils, e.g. *Ambrosia* and *Xanthium* in which the female heads fall away intact as prickly burrs with a fused involucre); each fruit (achene) *inferior*, 1-seeded:

COMPOSITÆ (p. 650)

Inflorescence not as above

182

182. Leaves 0; stems green and *succulent, jointed*; perianth *immersed* in the stem-joints; plants of damp salty soil (*Salicornia*):  
CHENOPODIACEÆ (p. 80)  
Leaves *obvious*, green; stems *not* succulent 183
183. Leaves all *opposite* or whorled 190  
Leaves *alternate* or radical (rarely the lower *opposite*) 184
184. Stipules  $\pm$  *scarious, united* into a sheath: POLYGONACEÆ (p. 70)  
Stipules 0 or quite free 185
185. Stipules *leaf-life*; perianth of 4 segments, with an *epicalyx* of 4 segments outside; leaves *palmately lobed* (*Aphanes* and *Alchemilla*):  
ROSACEÆ (p. 201)  
Stipules very small or 0; perianth *without* any *epicalyx* 186
186. Ovary *inferior*, 1-locular, 1-seeded; flowers *solitary*, axillary; leaves narrow, linear (*Thesium*): SANTALACEÆ (p. 58)  
Ovary *superior*, 1-locular, 1-seeded 188  
Ovary *superior*, 2-locular, 2-seeded 187
187. Leaves *reniform*; flowers *axillary*; sepals and stamens 5; *prostrate* creeping plant (*Dichondra*): CONVULVULACEÆ (p. 541)  
Leaves *not reniform*; flowers in *bractless racemes*; sepals 4; stamens 4 or 6; *erect* plant (*Lepidium*): CRUCIFERÆ (p. 164)
188. Style 1, the stigma sometimes *feathery*, flowers 2- or 4-partite (*Australina* and *Parietaria*): URTICACEÆ (p. 30)  
Styles 2 or more, *free* or *united* below; stigmas *simple*; flowers mostly 5-partite 189
189. Perianth *herbaceous* or, if ever *scarious* (rarely), then flowers *axillary and solitary* (plants often *halophilous*):  
CHENOPODIACEÆ (p. 80)  
Perianth *scarious*; flowers always in *clusters or spikes* (plants not *halophilous*): AMARANTHACEÆ (p. 112)
190. Leaves *toothed or lobed*; plant with *stinging hairs*; stamens 4:  
URTICACEÆ (p. 30)  
Leaves *entire*; no *stinging hairs* 191
191. Perianth of 4 or more segments; stamens 3 or more:  
CARYOPHYLLACEÆ (p. 130)  
Perianth of 2 segments or *obscurely* 2-lobed or 0; stamen 1 (plants often  $\pm$  *aquatic*): CALLITRICHACEÆ (p. 472)



## ANGIOSPERMÆ

(Flowering plants)

## DICOTYLEDONEÆ

### Family CASUARINACEÆ

[The correct systematic position of this curious family has long been disputed. In *Blumea* 6: 282-289 (1948), under an article entitled "A new system of the Cormophyta", H. J. Lam points out that the old phylum *Spermatophyta* does not cover a natural group and he proposes an entirely new classification of the Vegetable Kingdom into more natural phyla. Under this scheme, the *Casuarinaceæ* would accompany the *Gnetaceæ* (hitherto regarded as gymnospermous) in a new group, the PROTANGIOSPERMÆ—"created by Engler for any hypothetical Angiosperm ancestors, but taken over by me without any phylogenetical meaning." Lam further remarks (p. 287) that "*Casuarina* seems, typologically speaking, more closely connected to *Ephedra* (in the *Gnetaceæ*) than to any living monochlamydeous plant." In the present key, for convenience, *Casuarinaceæ* has been retained in its older, traditional position at the commencement of the dicotyledonous groups; there are certainly two oval cotyledons—cf. the narrow-linear cotyledons of *Ephedra* species.]

### CASUARINA L. ex Adans. (1763)

1. Shrubs (rarely small trees); mature cones usually  $\pm 1$  cm. wide [occasionally 1.5 cm. in *C. muellerana*]; fruiting valves *not prominent* or even  $\pm$  immersed, very obtuse or truncate 5  
Trees, usually 15-40 ft. high, with trunks 1 ft. or more in diameter; mature cones normally 1.5-2 cm. wide or more [1-1.5 cm. in *C. glauca*]; fruiting valves always very *prominent, protruding*, often acute 2
2. Ultimate branchlets coarse, 1 mm. thick (or more), *grey-green and often glaucous*, their ribs *flattened or rounded* (trees of western and north-western Victoria, often 40 ft. high) 4  
Ultimate branchlets very slender,  $< 1$  mm. thick, *green*, their ribs  $\pm$  *acutely keeled* (small bushy trees to 30 ft., widespread except in north-west) 3
3. Cones 2-3 cm. wide; valves sharply *mucronate* (at least when young), externally *glabrous, keeled* but without any dorsal appendages; leaf-teeth 9-12; ultimate branchlets  $\pm 0.8$  mm. thick, *pendulous*, the internodes 1-2 per inch:

*C. stricta* Dryand. in Ait. *Hort. kew.* 3: 320 (1789).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 26(1967); Lee, *Wild Life* 15: 27, 31 (1952); Reeves, *Wild Life* 7: 4 (1945); Black, *Flor. S. Aust.* ed. 2: fig. 303-304 (1948); Patton in Ewart, *Handb. For. Trees* t. 17 (1925); Patton, *Gum Tree* 7<sup>th</sup>:



22 (1922); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 65 (1905); Fiveash in Brown, *For. Flor. S. Aust. t. col.* (1883), as "*C. quadrivalvis*"; *Vict. Nat.* 29: t. 8 (1913).

*Vern.*: Drooping She-oak (Coast She-oak). *Distr.*: Frequent on the Victorian coast, on western lava-plains and volcanic hills (whence now largely destroyed by farming or grazing), but more scattered on drier rocky situations of the highlands (Grampians, Pyrenees, Mt. Kooyoora, Seymour, Warby Range, Pine Mt., Suggan Buggan, Buchan etc.) and absent from northern plains and Mallee; S.A., Tas., N.S.W.

—Cones 1.5-2 cm. wide; valves broadly acute but *not mucronate*, externally *pubescent* toward base, with large *transverse dorsal appendages*; leaf-teeth 6-8; ultimate branchlets very fine,  $\pm$  0.5 mm. thick, *erect*, the internodes 3-4 per inch:

*C. littoralis* Salisb. *Prodr. Stirp.* 2 (1796).

*C. suberosa* Otto & Dietr. *Allg. Gartenztg* 155 (1841).

*Illust.*: Ewart, *Handb. For. Trees* t. 18 (1925); Schoenfeld in Ewart, *Plants Indig. Vict.* t. 91 opp. 28 (1910); White in Bailey, *Compr. Cat. Qd Plant.* 506 fig. 501 (1913); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 72 (1905); Minchen & Baron in Maiden, *Flowering Plants Ferns N.S.W.* 6: t. 23, col. (1897); Myers in Turner, *Forage Plants Aust.* t. opp. 90 (1891); Mueller, *Key. Syst. Vict. Plants* 2: fig. 25 (1885); Fitch in Hooker f., *Flor. Tasm.* 1: t. 96, col. (1857)—all as "*C. suberosa*"; Scarth-Johnson, *Wildflowers Warm E. Coast* 53, col. (1967).

*Vern.*: Black She-oak (Erect She-oak). *Distr.*: Widespread in south-eastern Victoria from Port Phillip (where formerly frequent) to the Howe Ranges, chiefly on near-coastal sands but occurring also on heavy clay soils or among rocks, and extending well into the eastern highlands at Murrindal Mt., Amboyne Ck, Mt. Kaye etc., with isolated western occurrences on the Brisbane Ranges, Mt. Macedon and Creswick (north of the Divide); Tas., N.S.W., Qd.

4. Cones about 20 mm. long or more, *longer than broad*; valves 3-4 mm. wide, in numerous rows; leaf-teeth 9-12, very short,  $\pm$  *spreading*:

*C. cristata* Miq. in *Nieuwe Verh. Inst. Amst.* 13: 336, t. 10 (1848).

*C. lepidophloia* F. Muell. *Fragm. Phyt. Aust.* 10: 115 (1877).

*Illust.*: Miguel (l.c.); Leithhead, *Wild Life* 11: 71 (1949); Rossiter in Ewart, *Handb. For. Trees* t. 15 (1925); Hardy, *Gum Tree* 7<sup>th</sup>: 27 (1922), l.c. 8<sup>th</sup>: 4 (1925); White in Bailey, *Compr. Cat. Qd Plants* 506 fig. 497 (1913); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 51 (1904)—all, except Miguel, as "*C. lepidophloia*".

*Vern.*: Belah (Belar). *Distr.*: Widespread through the Mallee often a co-dominant tree with *Callitris preissii*, forming open Pine-Belah woodland on sandy rises (e.g. Boundary & Lindsay Points on Murray R., Kulkyne & Wyperfeld Nat. Parks, Woomelang, Nyah, Swan Hill), extending to parts of Wimmera District and with isolated occurrences in the Whipstick Scrub near Bendigo; N.S.W., S.A., W.A.

—Cones *subglobose*, 10-14  $\times$  12 mm., about *as long as broad*; valves regular, small,  $\pm$  2 mm. wide, in several rows; leaf-teeth about 16, *slender*, *usually appressed*:

*C. glauca* Sieber ex Spreng. *Syst.* 3: 803 (1826).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 14 (1925); Hamilton, *Proc. Linn. Soc. N.S.W.* 44: t. 29 fig. 26 (1919); White in Bailey, *Compr. Cat. Qd Plants* 506 fig. 496 (1913); Cabbage in Maiden, *For. Flor. N.S.W.* 2: t. opp. 96 (1904); Flockton in Maiden *l.c.* t. 55 (1904); Myers in Turner, *Forage Plants Aust.* t. opp. 89 (1891); Paté in Maire, *Flor. Afr. Nord* 7: fig. 1123 (1961).

*Vern.*: Swamp She-oak (Grey Buloke). *Distr.*: Localized and rare in Victoria, where known only by a few collections from the West Wimmera district (near Nhill, Aug. 1892, and "oak woods" at Dimboola, Jan. 1904); otherwise, apparently all States except Tas., in both N.S.W. and Qd being frequent on swampy coastal tracts or even in the salt water of tidal creeks.

[This species is closely related to *C. cristata*, populations of somewhat intermediate character being known; but in Victoria the two entities appear distinct enough—in size of fruit and valves, shape and number of leaf-teeth. If it should ever be agreed to merge them as a single, polymorphic species, then the name *C. glauca* has priority over *C. cristata*.]

—Cones  $\pm$  10 mm. long, much *broader than long*, very flattened; valves 3-5 mm. wide, in only 2 or 3 wheel-like rows; leaf-teeth 9-12, short and broad, always *tightly appressed*:

*C. luehmannii* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 24: 608, t. 47 (1900).

*Illust.*: Baker (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 305 (1948); Lec, *Wild Life* 12: 27 (1950), *l.c.* 15: 26 (1952); Willis, *Vict. Nat.* 52: t. 15 (1935); Ewart, *Handb. For. Trees* t. 16 (1925); White in Bailey, *Compr. Cat. Qd Plants* 506 fig. 498 (1913); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 76 (1905); Gill in Maiden *l.c.* 3: photo. cum t. 76 (1905).

*Vern.*: Bull-oak (Buloke). *Distr.*: Forming a universal alliance with *Eucalyptus microcarpa* in savannah-woodland, on loamy soil throughout the northern plains of Victoria between Serviceton and Wodonga (e.g. Nhill, Dimboola, Donald, Charlton, Bealiba, Swan Hill, Terricks, the Goulburn Valley, St. James, Springhurst, but now much reduced through clearing to farmland), with scattered occurrences in the Far North-west, Little Desert, Upper Glenelg R. and Keilor basalt plains south of Melton; S.A., N.S.W., Qd.

5. Branchlets very *obscurely ribbed*, almost smooth, the ultimate ones usually crowded and  $\pm$  0.7 mm. thick; leaf-teeth about 5; cone-valves completely *immersed*,  $\pm$  2 mm. wide, with 2 *prominent lateral appendages* as well as the dorsal one, beset with conspicuous rusty hairs toward base; male spikes usually  $< 1$  cm. long:

*C. nana* Sieber ex Spreng. *Syst.* 3: 804 (1826), *non sens.* Ewart (1931).

*Illust.*: Costin, *Study Ecosyst. Monaro Region N.S.W.* fig. 91, 92, 95 (1954); Sulman, *Some Familiar Wildflowers* t. 22 (1913); Miguel, *Nieuwe Verh. Inst. Amst.* 13: t. 2 (1848).

*Vern.*: Stunted She-oak. *Distr.*: Very localized in Victoria where apparently restricted to the extreme east, on sandstone outcrops near the junction of Genoa R. and Yambulla Ck (at borderline with New South Wales); also N.S.W. (at least as far north as Blue Mts.).

- Branchlets *distinctly ribbed*; cone-valves  $\pm$  *protruding*,  $\pm$  3 mm. wide, *without* lateral appendages; male spikes usually 1 cm. long or more
6. Ribs of branchlets dorsally *concave* ( $\pm$  channelled along their centres), the intervening grooves  $\pm$  *hairy*; leaf-teeth usually 7:

**C. paludosa** Sieber ex Spreng. *Syst.* 3: 803 (1826).

*Illust.*: Lee, *Wild Life* 15: 29-30 (1952); Miquel, *Nieuwe Verh. Inst. Amst.* 13: t. 8 (1848); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 41, col. (1968).

*Vern.*: Scrub She-oak. *Distr.*: A frequent component of coastal heaths throughout southern Victoria, from the Lower Glenelg River to Howe Ranges, also in the Grampians, Little and Big Deserts; Tas., S.A., N.S.W.

- Ribs of branchlets dorsally *convex*; leaf-teeth often 5 or 6
7. Branchlets *bright or dark green, terete*, the ribs obtuse and  $\pm$  *rounded* on the back; male spikes usually 1-2 cm. long; teeth *ciliolate*:

**C. pusilla** E. D. Macklin in *Trans. roy. Soc. S. Aust.* 51: 272, 273 fig. 22-26 (1927).

*C. nana* sens Ewart *Flor. Vict.* 383 (1931), *non* Sieber ex Spreng. (1826);

*C. distyla* sens Ewart *Flor. Vict.* 385 (1931), *non* Vent. (1803);

*C. paludosa* var. *robusta* E. D. Macklin in *Trans. roy. Soc. S. Aust.* 51: 271, fig. 20-21 (1927).

*Illust.*: Macklin (*ll.c.*); Lee, *Wild Life* 15: 32 (1952), as "*C. paradoxa*"; Adam in Ewart, *Handb. For. Trees* t. 13 (1925), as "*C. distyla*".

*Vern.*: Dwarf She-oak. *Distr.*: Frequent on sandy heaths of western Victoria (e.g. Otways, Portland district, Lower Glenelg R., Grampians, Little & Big Deserts) where growing often in association with *C. paludosa*, but of isolated occurrence in Gippsland (at Sunday Id and Sperm Whale Head); also S.A., in the south-east.

[The species, as at present recognized, is extremely polymorphic; but divergent populations seem to be variously connected by intermediate forms. Doubtless the definition of several subspecies or varieties within the complex would be justified. In the *Student's Flor. Tasm.* 3: 651 (1967) by W. M. Curtis, L. A. S. Johnson has described a new species, *C. monilifera*, which is also attributed to the Grampians in western Victoria. Pending a full revision of the "*C. distyla* complex", it is not at all clear to the writer how *C. monilifera* may be distinguished from populations currently referred to *C. pusilla*.]

- Branchlets *grey-green* or *rubescent*, *angular*, the ribs rather *acutely keeled*; male spikes 2-3 cm. long or more; teeth *non-ciliolate* (far western and Mallee plant):

**C. muellerana** Miq. in *Ned. kruidk. Arch.* 4: 99 (1856).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 307 (1948); Macklin, *Trans. roy. Soc. S. Aust.* 51: 276 fig. 30-33 (1927); Fiveash in Brown, *For. Flor. S. Aust.* t. col. (1883), as "*C. distyla*".

*Vern.*: Slaty She-oak (Kiwi Bush). *Distr.*: Locally frequent among sandstone rocks on the Grampians and Black Range and on mallee sand-hills of the

Little & Big Deserts, extending to Wyperfeld and Kulkyne Nat. Parks, Robinvale, Cowangie and other parts of far N.W. Victoria, with more isolated occurrences in Stawell, St. Arnaud and Bendigo districts, but no farther east; also S.A. where widespread.

Family \*SALICACEÆ

Leaves *lanceolate or oblanceolate, finely serrate* or almost entire; catkin-scales *entire*; buds with 1 outer scale; flowers *without a disk* \**Salix* (p. 23)

Leaves *ovate or ± deltoid, coarsely crenate* or lobed; catkin-scales *toothed* or lacerated; buds with several outer scales; flowers *with a cup-like disk* \**Populus* (p. 24)

\*SALIX L. (1753)

1. Leaves *oblanceolate or obovate*, 1-3" long (up to 3½ times as long as broad), *obtuse or broadly acute*, at maturity ± glossy and dark green above but *glaucous and thinly pubescent beneath* (with rust-coloured hairs on the prominently reticulate veins); shrub or small tree (6-30 ft.) with numerous, straight, ascending branches; male catkins 2-3 × 1-2 cm., ovoid to oblong, silky:

\**S. cinerea* L. *Spec. Plant.* 2: 1021 (1753)

*Illust.*: Strudwick in Butcher, *New ill. Brit. Flor.* 1: 977 (1961) as "*S. atrocineria*"; Strudwick, *Further Ill. Brit. Plant.* fig. 335 (1930); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 80 fig. 3, col. (1910); Reichenbach, *Icon. Flor. germ.* 11: t. 576, col. (1849).

*Vern.*: Common Sallow (Grey-leaved Sallow). *Dist.*: Indigenous to western Europe and N.W. Africa; naturalized in Victoria in several highland districts chiefly near water (Creswick, Turpin's falls on Campaspe R., Baw Baws, Dargo High Plains, Mt. Buffalo where frequent), perhaps also in parts of N.S.W.

[The population occurring in Australia is apparently referable to subsp. *atrocinerea* (Brot.) Silva & Sobr., with more thinly pubescent (never tomentose) twigs and leaves. This is one of the so-called "pussy willows"; but the very early-flowering (July to August) shrub, commonly grown for ornament under this name in many suburban gardens, is different and may be referable to a hybrid population between the European *S. caprea* L. and *S. daphnoides* Vill., having no raised striations on the young wood of twigs (beneath the bark), the 2 staminal filaments entirely free and glabrous; it is a valuable source of early pollen for bees—see *Honey Flor. Vict.* ed. 5: 110 fig. 71B (1949).]

—Leaves *lanceolate to linear-lanceolate*, 2-6" long (4-10 times as long as broad), *acuminate*, at maturity almost or quite *glabrous*; trees (to 80 ft. high) with massive trunks and often yellowish branchlets 2

2. Branches spreading or ascending (*never pendulous*); leaves 15 mm. wide or more, the petioles 5-15 mm. long and conspicuous marginal teeth 2-6 per cm.; female catkins 3-7 cm. long:

\**S. alba* X *S. fragilis* —hybr.

{\**S. alba* L. *Spec. Plant.* 2: 1021 (1753).

{\**S. fragilis* L. *l.c.* 1017 (1753).

*Vern.*: Whitecrack Willow (U.S.A.). *Distr.*: Of European origin, but now widely planted and naturalized in many parts of the world, e.g. N.S.W., A.C.T. and Victoria where frequent along stream-banks near settlements (Lal Lal & Turpin's Falls, Melbourne region, Goulburn R., Bairnsdale, Snowy R., Delicknora Ck, etc.).

[Originating in Germany, *S. rubens* Schrank is a well-known hybrid between *S. alba* and *S. fragilis*; it is most probably identical with the tree occurring in Victoria.

*S. alba* var. *cærulea* (Sm.) Sm. (Cricket-bat Willow) has been cultivated for bat-timber at Shepherd's Flat near Daylesford, while the var. *vitellina* (L.) Stokes (Yellow Willow or Golden Osier) is planted occasionally on river banks (e.g. at Lindsay Point on the Lower Murray near South Australia)—its bright yellow twigs are distinctive.]

—Branches very lithe, long, and gracefully *drooping almost to the ground*; leaves <15 mm. wide, the petioles <5 mm. long and marginal teeth minute (6-9 per cm.); female catkins up to 2 cm. long:

\**S. babylonica* L. *Spec. Plant.* 2: 1017 (1753).

*Illust.*: Pryor, *Trees in Canberra* t. 12 (1962); Krüssmann, *Handb. Laubgehölze* 2: 444 fig. f (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 10: fig. 2523, col. (1929); Coste, *Flor. Franc.* 3: fig. 3307 (1906).

*Vern.*: Weeping Willow (Napoleon's Willow). *Distr.*: Apparently indigenous to western China, whence distributed by cuttings to many parts of the Orient, but the early history obscure. It reached Europe about the end of the 17th century (England in 1730), and is now grown extensively throughout temperate parts of the world where often naturalized along streams in Europe, N. America, S. Africa, N.Z., Tas., N.S.W., A.C.T., S.A. and Vic. (e.g. Yarra, Goulburn, Ovens, Mitta, Upper Murray & Snowy Rivers).

[In his *Flor. Vict.* 388 (1931), Ewart gives Eurasian *S. caprea* L. (Goat Willow or Great Sallow) as the only naturalized member of *Salicaceæ* in Victoria, the single recorded occurrence being Leongatha (Aug. 1914). The voucher specimens in Melbourne Herbarium, however, are not at all representative of *S. caprea* in its typical (or average) state, and their more acute but less woolly leaves rather suggest a population of hybrid origin—perhaps with *S. cinerea* as one parent-species.]

\**POPULUS* L. (1753)

1. Leaves  $\pm$  *deltoid*, always *glabrous*; catkin-scales *glabrous*; branches and twigs  $\pm$  *erect* (giving tree a narrow,  $\pm$  fusiform outline); bark with long fissures, dark (at least below), without obvious lenticels:

\**P. nigra* L. *Spec. Plant.* 2: 1034 (1753)

var. *italica* Du Roi *Harbkesche wilde Baumzucht theils nordamerik.* 2:141 (1772).

*Illust.*: Pryor, *Trees in Canberra* t. 9 (1962); *Victoria's Resources* 6: 63 June-Aug. 1964)—without name; *N.Z. J. Agric.* 90: cover, col. (Mar. 1955)—without name; Hegi, *Ill. Flor. Mittel-Eur.* 3: 64 fig. 471 (1910), as "*P. italica*".

*Vern.*: Lombardy Poplar (Italian Poplar). *Dist.*: Apparently a staminal sport originating on the plains of Lombardy (Italy) in the early 18th century. Now spread throughout temperate parts of the world by cuttings and frequent in N.Z., Tas., N.S.W., A.C.T., S.A. and Vic. where, although not escaping from plantations, it persists through extensive and often troublesome suckers (e.g. Loddon, Yarra, Goulburn, Ovens & Upper Murray valleys and about many settlements).

[Opinions vary concerning the taxonomic status of Lombardy Poplar. In *Flor. Brit. Isles* 742 (1952) Clapham, Tutin & Warburg treated it as a species, and for those who wish to do likewise the correct citation would be *P. italica* (Du Roi) Moench *Verzeichn. auständ. Bäume und Stauden* . . . *Weissenstein* 79 (1785); but in *Contr. N.S.W. Herb.* 2: 151 (1955) E. J. McBarron considers it merely as a "clone of *P. nigra*", while in the second (1962) edition of *Flor. Brit. Isles* the authors return to Du Roi's varietal concept, used above.]

—Leaves ovate-orbicular, white- or grey-tomentose beneath when young; catkin-scales fringed with long hairs; branches spreading (giving a wide crown to tree); bark smooth (except at very base), grey, with conspicuous rhomboid lenticels.

2. Terminal leaves of long shoots (also sucker foliage) deeply and palmately 5-lobed, those of short shoots remaining white-tomentose beneath throughout summer and autumn; buds white, cottony-tomentose; catkin-scales irregularly crenate or shortly dentate:

\**P. alba* L. *Spec. Plant.* 2: 1034 (1753).

*Illust.*: Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 10: fig. 2549, col. (1929); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 83 fig. 2, col. (1910); Coste, *Flor. Franc.* 3: fig. 3311 (1906); Rogers, *The Tree Book* t. opp. 147 (1905); Reichenbach, *Icon. Flor. germ.* 11: t. 614, col. (1849).

*Vern.*: White Poplar (Abele). *Dist.*: Indigenous to central & southern Europe, N. Africa and W. Asia; but widely cultivated for centuries in other parts of the world, including Victoria where it has spread by suckering along some roads (e.g. Lower Ferntree Gully & Highway 8 west from Ballarat).

—Terminal and sucker-leaves  $\pm$  evenly toothed (not or only shallowly lobed), those of short shoots becoming almost glabrous beneath in summer; buds thinly tomentose or glabrescent; catkin-scales cut almost half-way into bold lanceolate laciniae:

\**P. canescens* Sm. *Flor. brit.* 3: 1080 (1804).

*Illust.*: Strudwick in Butcher, *New ill. Brit. Flor.* 1: 966 (1961); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 10: fig. 2549 b, col. (1929); Elwes & Henry, *Trees Gr. Brit. & Ire.* 7: t. 382, 408 (1913); Reichenbach, *Icon. Flor. germ.* 11: t. 617, col. (1849), as "*P. hybrida*".

*Vern.*: Grey Poplar. *Dist.*: Indigenous to southern parts of Europe (including England); introduced as a park and avenue tree in S. E. Australia, including Victoria where it has been noted to persist by suckering in the Melbourne district, at Bairnsdale and against the Chalet at Mt. Buffalo.

[Eurasian *P. tremula* L. (Aspen) and hybrid *P. X canadensis* Moench var. *aurea* (Dipp.) Rehder (Golden Poplar) appear occasionally as garden and street ornamentals in cooler parts of Victoria, but the former is uncommon while the latter does not persist by suckering as do the above three widely planted species.]

### Family FAGACEÆ

Leaves <1" long, rhomboid, *crenato-serrulate*; fruit nut-like, completely enclosed until ripe in a small, prickly, 4-valved involucre (mountain-gully tree of rain-forests) *Nothofagus* (p. 26)

Leaves 2" long or more, pinnatisect; fruit an acorn 1-2" long, *exserted* (by > ½ its length) from the *scaly, cup-shaped involucre* \**Quercus* (p. 26)

### NOTHOFAGUS Blume (1850)

*N. cunninghamii* (Hook.) Oerst. in *Vidensk. Sel. Skr.* ser. 5, 9: 355 (1871).

*Fagus cunninghamii* Hook. *J. Bot., Lond.* 2: 152, t. 7 (1840).

*Illust.*: Hooker (*l.c.*); Fitch in *Curtis's bot. Mag.* 140: t. 8584, col. (1914); Skewes in Smith, *Aust. Encycl.* 6: 373 (1958); Adam in Ewart, *Handb. For. Trees* t. 19 (1925).

*Vern.*: Myrtle Beech. *Dist.*: Restricted in Victoria to south-central cool shaded forests, with rainfall in excess of 40 ins., and usually occupying sheltered valleys as an understorey to tall mountain eucalypts (Cerberean, Upper Yarra, Baw Baw and Strzelecki Ranges, ascending to ± 4000 ft. alt. at Mt. Donna Buang, Lake Mt. and Baw Baws, with more isolated occurrences at Wilson Prom. to the east and southern Otways to the west); also Tas. where widespread.

*Diagn.*: Large spreading evergreen tree to 50 or even 100 ft. high, the branchlets forming decorative "fans" of foliage (orange-red in young growth); leaf-blades very shortly petiolate, ovate-rhomboid to almost deltoid, 10-25 × 7-18 mm., gland-dotted and lustrous green above, paler beneath, shortly and irregularly crenate-serrate at margins, the membranous stipules (2-3 mm. long) falling early; flowers appearing Nov.-Jan., unisexual in upper axils of separate branchlets; male flowers 1-4 on very reduced bracteose hairy catkins, each consisting of a 6-lobed membranous perianth (± 4 mm. wide) with 6-10 stamens, the broad-linear anthers 2-3 mm. long, on hairy filaments ± 1 mm.; female flowers sessile, in clusters of 3, surrounded by a leathery 4-valved involucre (5-8 mm. long) bearing coarse recurving glandular dorsal scales, the 2 lateral florets with 3-keeled and central one with 2-keeled perianth embracing a 3-locular ovary and minute 3-stigmatic style; fruit narrowly 2- or 3-winged and nut-like, 3-4 mm. long.

### \*QUERCUS L. (1753)

\**Q. robur* L. *Spec. Plant.* 2: 996 (1753).

*Illust.*: Pryor, *Trees in Canberra* t. 18 (1962), as "*Q. pedunculata*"; Strudwick in Butcher, *New ill. Brit. Flor.* 1: 964 (1961); Petts in Meikle, *Brit. Trees & Shrubs* fig. 65 on 169 (1958); Perrin, *Brit. flowering Plant.* 1: t. 47, col. (1914); Hegi,

*Ill. Flor. Mittel-Eur.* 3: t. 86 fig. 1, col. (1910); Reichenbach, *Icon. Flor. germ.* 11: t. 644, col. (1849).

*Vern.*: Common Oak (English Oak). *Distr.*: Indigenous to Europe and W. Asia; long cultivated for shade and ornament in temperate Australia, including Victoria where seedlings often appear in quantity under mature trees, persisting where there is room for growth (e.g. Melbourne, Narre Warren, Creswick, Daylesford and other cool districts).

*Diagn.*: Wide-spreading deciduous tree to 100 ft. high, with grey-brown twigs and ovoid buds 2-5 mm. long; leaves glabrous, 5-12 cm. long, obovate-oblong, obtuse, often  $\pm$  cordate at base where usually provided with a pair of reflexed auricles, pinnatisect in 3-6 pairs of unequal obtuse lobes, dull green above, paler beneath, the petiole very short (to  $\pm$  5 mm.) and linear stipules caducous; male catkins 2-8 cm. long, the brown ellipsoid acorn (2-4 cm. long) immersed for  $\frac{1}{2}$  its length in a firm cup (1.5-2 cm. wide) covered with small, appressedly imbricate, ovate scales.

[Many other species of oaks are cultivated in various parts of Victoria, but few tend to persist by seedlings as does *Q. robur*. The sombre-leaved Evergreen or Holm Oak (*Q. ilex* L.) of southern Europe is very commonly planted and, because of its drought-resisting propensities, can flourish over a wider range of country (e.g. even in the Mallee) than most members of the genus; the dark green,  $\pm$  serrate leaves are grey-tomentose beneath.]

### Family ULMACEÆ

Leaves doubly serrate,  $\pm$  unequal at base; fruit flattened, very broadly winged,  $\pm$  orbicular, 10-20 mm. wide (massive deciduous trees of roads and gardens) *\*Ulmus* (p. 27)

Leaves simply serrate, equal at base or nearly so; fruit a small wingless ovoid drupe (rare shrub or very small evergreen tree of far East Gippsland) *Trema* (p. 28)

### \*ULMUS L (1753)

Twigs and under-surfaces of leaves finally  $\pm$  glabrescent; leaves usually  $>8$  cm. long, acuminate; sucker-stems with prominent corky flanges to 2 cm. wide; seed  $\pm$  central in fruit:

\**U. X hollandica* Mill. *Gdnrs Dict.* ed. 8: n. 5 (1768).

*Illust.*: Bancroft, *Gdnrs' Chron.* ser. 3, 96: 299 fig. 120 (1934); *Camb. Brit. Flor.* 2: t. 96 & 97 (1914).

*Vern.*: Dutch Elm. *Distr.*: Origin uncertain, but probably England where it is now abundant as a hedge tree (from Cornwall up the east coast to Yorkshire); widely planted in Victoria and persisting by vigorous corky suckers on many suburban streets and allotments after the original trees have been cut down.

[A variable hybrid population, the parent-species of which are presumed to be *U. glabra* Huds. and *U. carpinifolia* Gleditsch. *U. carpinifolia* var. *suberosa* (Moench, *ut. sp.*, 1785) Rehder in *J. Arnold Arbor.* 19: 273 (1938) also has corky-winged branches and may be present in Victoria; it is well figured by Reichenbach in his *Icon. Flor. germ.* 11: t. 663 (1849).]



Twigs and under-sides of leaves *persistently pubescent*; leaves broadly ovate, 4-9 cm. long, *acute*; sucker-stems not or *only slightly corky*; seed situated at  $\frac{3}{4}$  from base of fruit:

\**U. procera* Salisb. *Prodr. Stirp.* 391 (1796).

*Illust.*: Morrison, *Melbourne's Gdn* 19 (1946); Strudwick in Butcher, *New ill. Brit. Flor.* 1: 949 (1961); Strudwick, *Further Ill. Brit. Plant.* fig. 328 (1930), as "*U. campestris*"; Jackson, *New Flora & Silva* 2: t. 80 (1930), as "*U. campestris*"; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 86 fig. 3, col. (1910), as "*U. campestris*".

*Vern.*: Common Elm (English Elm). *Distr.*: Native to England, but now widely planted in cooler temperate parts of both hemispheres; frequent and familiar as an avenue and garden tree in many districts of Victoria, although neither strictly naturalized nor spontaneously spreading.

[Eurasian *U. glabra* Huds. (Wych Elm) and a hybrid between this species and the English *U. plotii* Druce (Plot's Elm) are also present as garden or street trees in many parts of Victoria, but are not truly naturalized. The former is distinguished by large (8-16 cm.), long-pointed, scabrid leaves with unequal  $\pm$  overlapping basal lobes (its epithet "*glabra*" being quite inept); the latter differs in having rather smaller, less scabrid leaves, all or some of which have subequal bases. *U. parvifolia* N. J. Jacq. (Chinese Elm) is a small, very spreading, almost evergreen tree that is very hardy to exposure—in coastal districts etc.—and increasingly popular in Victoria; it has silvery-grey bark, small leaves (about 1" long) and fruits in autumn.]

#### TREMA Lour. (1790)

*T. aspera* (Brongn.) Blume *Mus. bot. Lugd.-Bat.* 2: 58 (1856).

*Celtis aspera* Brongn. *Bot. (Phan.) Voy. La Coquille* 213, t. 48 (? 1834).

*Illust.*: Brongniart (*l.c.*); Mahood in Chippendale, *Poison Plant. N. Terr.* Pt 2: fig. 11 (1958); McIntosh & White, *Qd agric. J.* 43: 372 (1935); Adam in Ewart, *Handb. For. Trees* t. 20 (1925); Schoenfeld in Ewart, *Plants Indig. Vict.* t. 90 opp. 27 (1910), as "*Sponia aspera*"; Hope in Bailey & Gordon, *Plant. poison. & injur. to Stock* t. opp. 93 (1887).

*Vern.*: Peach-leaf Poison-bush (Rough Hemp Nettle, Poison Peach). *Distr.*: Very localized and rare in Victoria where known only by a single collection from Mallacoota Inlet in the far south-east (Mar. 1937); otherwise not infrequent at the edges of jungle scrubs in N.S.W., Qd (to Cape York), Arnhem Land, Victoria R. and the Kimberley region of W.A., with disjunct occurrences in the MacDonnell Ranges (Cent. Aust.) where quite rare, ? Indonesia.

*Diagn.*: Tall shrub or slender tree to 20 ft. high, the branchlets and foliage appressedly hirsute; leaf-blades 1.5-2.5" long, 0.5-1" wide, ovate-lanceolate, acuminate, serrulate on margins, prominently 3-veined from base on under-side which is more hairy, the petiole 3-6 mm. long; flowers both bisexual and male, borne together in short, axillary, 5- to 10-flowered cymes; perianth-segments 5, narrowly obovate, free to base, 1-2 mm. long,  $\pm$  villous externally; anthers broad, to 1 mm. long, slightly exserted; ovary pubescent, with 2 microscopic styles; fruit a globose or ovoid, blackish drupe 3-4 mm. long. The plant has long been regarded as poisonous to stock, but in some districts it can be browsed with impunity.

## Family MORACEÆ

## FICUS L. (1753)

Plant *glabrous* in all its parts; leaves *entire*, coriaceous, 3-4" wide, oblong-elliptic, *lustrous* above, closely and transversely *penniveined* beneath; fruiting receptacles axillary, 15-25 mm. diam., *smooth*, *purplish* with creamy dots (introduced tree with large wide-spreading crown and wrinkled grey bark resembling elephant skin):

\**F. macrophylla* Desf. *Tabl. École Bot. Mus. Hist. nat.* 209 (1804).

*Illust.*: Audas, *Native Trees Aust.* 203 (1934); Francis, *Aust. Rainforest Trees* figs. 31-32 (1929); White in Bailey, *Compr. Cat. Qd Plant.* fig. 483 (1913); Maiden, *Agric. Gaz. N.S.W.* 19: 970 (1908); Paté in Maire, *Flor. Afr. Nord* 7: fig. 1196 (1961).

*Vern.*: Moreton Bay Fig (Peemith & Waabie—aborig.). *Distr.*: Indigenous to coastal N.S.W. and Qd (from Shoalhaven R. northward to S. Queensland); long planted in Victoria for shady avenues, or specimen trees in larger gardens, whence birds and possums distribute the seed so that young plants often appear as epiphytes on palm trunks etc. in the Melbourne suburbs.

Plant *hispid* or *scabrid* on young branches, foliage and inflorescences; leaves often *irregularly toothed* on upper margins, 1.5-2.5" wide, very *scabrous* above, the *divergent veins* distant and prominent beneath; fruiting receptacles both axillary and along old wood, 8-12 mm. diam., densely *grey-hispid* (small jungle tree of far south-east):

*F. coronata* Spin. *Cat. Hort. St. Sebast.* 29 (1818).

*F. stephanocarpa* Warburg in *Repert. nov. Spec. Regn. veg.* 1: 75 (1905).

*Illust.*: Wakefield, *Vict. Nat.* 76: 230, 231, 259 (1960), as "*F. stephanocarpa*"; Adam in Ewart, *Handb. For. Trees* t. 21 fig. A (1925), as "*F. scabra*"; Gurney, *Agric. Gaz. N.S.W.* 22: fig. 4 opp. 727 (1911), as "*F. stephanocarpa*".

*Vern.*: Sandpaper Fig (Creek Fig, Purple Fig—Qd). *Distr.*: Extremely localized in Victoria, where confined to a few jungle gullies in Mallacoota district of far East Gippsland (Harrison's Ck, Dec. 1950; Smellie's Ck near Gipsy Point, Jan. 1957 & Jan. 1959); also eastern N.S.W. & Qd, and an early introduction into the hot-houses of Europe.

[Figs of commerce come from the Mediterranean *Ficus carica* L., several cultivars of which are widely grown in Victoria; suckers often persist around old gardens, but the plant does not seem to be spread by seed. Chinese and Japanese *F. pumila* L. (Climbing or Creeping Fig) is a popular close-gripping creeper for covering walls and stonework—its foliage is dimorphic and the hard purplish fruiting receptacles relatively very large (2-3" long).

European *Humulus lupulus* L. (Hops) and *Cannabis sativa* L. (Hemp) of temperate Asia both belong to the small related family *Cannabiaceæ*, their foliage being dissected and maple-like and stems rather scabrid. The former is a vigorous climber (to 20 ft.), cultivated in north-eastern Victoria and parts of Gippsland for its papery fruits which are used in brewing. The latter sometimes came up in gardens, especially near bird-cages; but, since importation of hemp-seed has

been prohibited, this erect annual herb (to 10 ft. high) is now rarely if ever seen in the State.]

### Family URTICACEÆ

1. Plant with stinging hairs; stems ridged or 4-angled; leaves opposite, deeply serrate; female perianth-segments 4, in unequal pairs

*Urtica* (p. 30)

Plant without stinging hairs; stems terete,  $\pm$  decumbent; leaves alternate; female perianth-segments or lobes equal

2

2. Leaves entire, >6 mm. long; flowers in clusters; male perianth cup-like, with 3-4 equal teeth and 3-5 stamens; stems never rooting at nodes

*Parietaria* (p. 31)

As for the last, but leaves <6 mm. long, flowers solitary in axils and the creeping stems rooting at nodes

\**Helxine* (p. 31)

Leaves crenate or obtusely toothed; male perianth funnel-shaped, bilabiate, with 1 stamen

*Australina* (p. 32)

### URTICA L. (1753)

Leaves broadly ovate to elliptic, usually <2" long, the veins sprinkled with hairs beneath; male and female flowers mixed in the same cluster (erect annual, rarely >2 ft. high):

\**U. urens* L. *Spec. Plant.* 2: 984 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 311 (1948); Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: fig. 48 I (1940); Maiden, *Weeds N.S.W.* frontisp., col. (1920); Strudwick in Butcher, *New ill. Brit. Flor.* 1: 945 (1961); Paté in Maire, *Flor. Afr. Nord* 7: fig. 1170 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 88 fig. 3, col. (1910); Reichenbach, *Icon. Flor. germ.* 12: t. 652 fig. 1320, col. (1850).

*Vern.*: Small Nettle (Dwarf Nettle, Lesser Stinging Nettle). *Distr.*: Indigenous to temperate regions of Eurasia & N. Africa; introduced into N. & S. Amer., S. Afr., N.Z., all Australian States and in Victoria a widespread frequent weed throughout all regions except the alps.

Leaves narrow-lanceolate to linear, up to 6" long, the veins hairless beneath; male and female flowers in separate clusters which form slender spikes (coarse ascending or rambling perennial 2-4 ft. high, its elongated branches with distant nodes and large, painfully stinging hairs):

*U. incisa* Poir. in *Encycl. méth. (Bot.) Suppl.* 4: 224 (1816).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 312 (1948); Bailey, *Weeds & suspect. poison. Plant Qd* fig. 326 (1906); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 244, col. (1967).

*Vern.*: Scrub Nettle. *Distr.*: Widespread and locally frequent throughout cooler parts of Victoria, in mountain-forests, on basaltic escarpments of the Western Plains, in river gorges and coastal swamps; temperate parts of all States except W.A. (but only the south-east of S.A.), N.Z., N. Cal.

[In *Flor. Vict.* 390 (1931) Ewart includes the widespread boreal *U. dioica* L. (Tall Nettle), with the statement "very common in Victoria"; however, no local specimens are preserved in Melbourne Herbarium, nor has the present writer seen this plant anywhere in the State. One is tempted to suggest that mis-identifications of robust populations of the abundant *U. urens* had been responsible for Ewart's remark, and, until indubitable examples of *U. dioica* are forthcoming, it is thought proper to delete the species from the Victorian flora; R. H. Anderson in *Contr. N.S.W. Herb.* 1: 19 (1939) retains *U. dioica* as a naturalized alien in New South Wales, but it is apparently not recorded for South Australia or Tasmania. The chief differences from *U. urens* are: plant perennial, rhizomic and dioecious; stems downy between the stinging hairs; lower leaf-blades longer than their petioles; inflorescences up to 4" long.]

### PARIETARIA L. (1753)

Annual with *tender stems*; stigmatic hairs *seated directly on ovary* (style absent):

*P. debilis* Forst. f. *Flor. Ins. Aust. Prodr.* 73 (1786).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 310 (1948); Fedtschenko, *Acta Hort. Petrop.* 43: 88 (1930); Cannon, *Publ. Carneg. Instn* 131: t. 7 (1911).

*Vern.*: Shade Pellitory (Forest Pellitory). *Distr.*: Widespread through Victoria, excepting the alps and dense forest country, and often frequent in shady situations among rocks (e.g. Mallee, Grampians, Western Plains, coast, highland foothills and Upper Murray); all States, N. Terr., N.Z., ? S.E. Asia.

Perennial with *firm*,  $\pm$  *wiry stems*; penicillate stigma surmounting a *distinct slender style*:

\**P. diffusa* Mert. & W. Koch *Dtsch. Flor.* ed. 3, 1: 827 (1823).

*Illust.*: Strudwick in Butcher, *New ill. Brit. Flor.* 1: 944 (1961); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 10: fig. 2506 b, col. (1929); Syme, *Engl. Bot.* 8: t. 1278 (1868); Reichenbach, *Icon. Flor. germ.* 12: t. 651 fig. 1318, col. (1850).

*Vern.*: Wall Pellitory (Pellitory-of-the-wall). *Distr.*: Indigenous to Europe (often in rock-crevices and cracks of old walls); introduced into N.S.W. and Victoria where occasional at Colac and in Melbourne suburbs (South Yarra, Elwood, N. Brighton).

### \*HELXINE Requier (1825)

\**H. soleirolii* Requier in *Ann. Sci. nat. sér.* 1, 5: 384 (1825).

*Illust.*: Paté in Maire, *Flor. Afr. Nord* 7: fig. 1182 (1961); Makins, *Herbaceous Gdn Flor.* fig. 79 c (1957); Graf, *Exotica* 3: 1476 (1963); Böhme, *Gartenflora* 80: 365 (1931); Boynton, *Addisonia* 9: t. 297 (1924); *Rev. Hort.* 1917: 235 (1917); Engler, *Natürl. PflFam.* 3<sup>1</sup>: 115 (1888).

*Vern.*: Baby's Tears—U.S.A. (Mind-your-own-business, Mother-of-thousands, Corsican Carpet).

*Distr.*: Indigenous to Western Mediterranean (on Corsica, Sardinia & the Balearic Is); commonly planted in cool green-houses, rockeries and crazy pavements, whence escaping and becoming locally naturalized in parts of N. Amer.,

England, Ireland and Victoria (chiefly about urban gardens of Melbourne, Geelong etc.).

*Diagn.*: Slender creeping downy herb, forming dense flat evergreen mats, the stems rooting freely on damp earth; leaves almost rotund or slightly oblique, subsessile, alternate, entire, 2-6 mm. long; flowers minute, unisexual, solitary in axils, embraced by an involucre of 1 bract and 2 bracteoles, the female with narrowly tubular 4-lobed perianth enclosed in the almost connate involucre, the male with 4-lobed perianth and 4 stamens.

#### AUSTRALINA Gaudich. (1830)

Leaf-blade usually >1.5 cm. long (often 2-5 cm.), *ovate to ovate-lanceolate*; male flowers 2-3 mm. long, *sessile* in clusters of 2-4 on axillary peduncles 5-20 mm. long, the perianth bearing both *bristly and shorter intervening hairs*; anthers  $\pm$  2 mm. long; female perianth *hairy all over* (stems  $\pm$  succulent, downy, often reddish):

*A. muelleri* Wedd. in *Arch. Mus. Hist. nat., Paris* 9: 545 (1857).

*Illust.*: Wawra, *Itin. Prince Saxe-Coburg* 2: t. 10 (1888).

*Vern.*: Shade Nettle (Smooth Nettle). *Distr.*: Rather frequent in moist shady situations throughout the eastern highlands, ascending to almost 5000 ft. on Lake Mt., Mts. Buller, Buffalo, Tingaringy etc. and tolerating very low light intensities (in mountain-forests, fern gullies, deep rocky gorges and against waterfalls), with more isolated western occurrences in the Otways; Tas. N.S.W., Qd.

Leaf-blade <1.5 cm. long (often only 5-10 mm.),  $\pm$  *rotund*; male flowers  $\pm$  1.5 mm. long, *very shortly pedicellate* and on peduncles only 1-2 mm. long, the perianth *glabrous* except for scattered bristles; anthers  $\pm$  1 mm. long; female perianth *almost glabrous* but with  $\pm$  hairy margins:

*A. pusilla* (Desf. ex Poir.) Gaudich. in Freyc. *Voy. aut. Monde (Bot.)* 505 (1830).

*Urtica pusilla* Desf. ex Poir. in *Encycl. méth. (Bot.) Suppl.* 4: 224 (1816).

*Illust.*: Gaudichaud, *Voy. Bonite (Bot. Atl.)* t. 114 fig. A 1-18 (1851).

*Vern.*: Small Shade Nettle. *Distr.*: Apparently quite localized in Victoria where known only by a single collection from Sealer's Cove on Wilson Prom. (1960); Tas. where abundant, N.S.W., N.Z.

[A collection in Melbourne Herbarium from Braidwood district, N.S.W., has the small leaves of *A. pusilla* but sessile male flowers (in 2's and 3's) of *A. muelleri*; it may represent a transitional form.]

#### Family PROTEACEÆ

1. Flowers very numerous, in dense, thick, erect,  $\pm$  sessile, *cylindrical spikes*, which are *hardened and cone-like in fruit* (the large woody foli-  
cles partly embedded in axis of cone) *Banksia* (p. 56)

Floral and fruiting characters otherwise

2. Fruit a *leathery* or *woody*, 2- to several-seeded *follicle* (opening in 2 valves); flowers usually 2 to each bract 6  
Fruit a *drupe*, *small nut* or *achene*; flowers yellow, white or bluish, usually 1 to each bract 3
3. Leaves *deeply dissected*; fruit a *nut* 5  
Leaves *entire*; fruit a *drupe* or *achene* 4
4. Flowers solitary and axillary or in *small clusters*, yellow, with 4 *equal recurving segments*; perfect stamens 4, *not* adhering to each other; fruit a relatively large, *stalked drupe* *Persoonia* (p. 33)  
Flowers in *loose corymbs*, white or bluish,  $\pm$  *bilabiate*; anterior stamen abortive, the others *adhering*; fruit a *small hairy achene* *Conospermum* (p. 37)
5. Leaves  $>1''$  long, 2- to 3-times pinnatisect, with *flattened segments*; flowers in dense, bracteate, *cone-like heads* *Isopogon* (p. 36)  
Leaves  $<1''$  long, cut into 3-5 *terete segments*; flower *solitary*, in an involucre of 4-8 bracts *Adenanthos* (p. 37)
6. Flowers numerous, *bright red*, in dense ovoid to globular heads (2-5" wide), surrounded by an *involucre of large red bracts*; follicle with several seeds (broad-leaved tree of far East Gippsland) *Telopea* (p. 54)  
Flowers seldom bright red, *never* in large dense heads with coloured involucre; seeds frequently only 2 per follicle 7
7. Fruit opening in 2 *thick woody valves*; seeds 2, almost *black*, each with a large dark terminal wing (leaves often pungent) *Hakea* (p. 48)  
Fruit a *leathery follicle* (never woody); seeds *brown or pale*, winged or wingless 8
8. Flowers in *terminal spikes*; perianth *regular*, the 4 segments free or almost so; anthers on *short filaments* (alpine shrub with entire leaves  $<1''$  long) *Orites* (p. 53)  
Flowers in *racemes*, *clusters* or *pairs*; perianth *inclined* to one side; anthers *sessile* 9
9. Seeds 2 *collateral*; inflorescence various *Grevillea* (p. 38)  
Seeds *several*, in 2 *imbricate rows*; follicle *broad, flat*, guitar-shaped after dehiscence; inflorescence an axillary or terminal raceme or creamy-white flowers *Lomatia* (p. 55)

PERSOONIA Sm. (1798)

1. Perianth 16-18 mm. long, with *narrow-linear* silky petals; leaves flat,  $2-4 \times \frac{1}{2}''$ , minutely pubescent (tree to 30 ft. in gullies of eastern mountain-forests):

*P. arborea* F. Muell. *Fragm. Phyt. Aust.* 5: 37 (1865).

*Illust.*: Patton in Ewart, *Handb. For. Trees* t. 24 (1925); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 385, col. (1968).

*Vern.*: Tree Geebung. *Distr.*: Endemic in Victoria where apparently confined to wet forests of the Yarra, Thomson, Latrobe and Bunyip River watersheds, often in association with *Nothofagus cunninghamii* (e.g. Blacks' Spur, Mt. Donna Buang, Powelltown, Beenak, Labertouche area, Mt. Toorong, Baw Baws).

- Perianth up to 14 mm. long; petals *broad-linear* 2
2. Flowers *single* in the axils (but sometimes appearing racemose along leafless portion of a branch) 4
- Flowers *several* in short axillary racemes, the common axis *not* extending as a leafy branch; leaves 2-5" long, up to 1" wide 3
3. Perianth and branchlets densely *rusty-pubescent* (spreading shrub to 6 ft.):

**P. confertiflora** Benth. *Flor. aust.* 5: 396 (1870).

*Vern.*: Cluster-flower Geebung. *Distr.*: Widespread and locally frequent in foothill to subalpine forest of the more eastern highlands, between Moe and the mountainous border tracts of New South Wales, often on rocky terrain (e.g. Haunted Hills, Maffra and Bairnsdale districts, Nowa Nowa, Mts. Ellery & Kaye, Wingan Inlet, Mt. Drummer, Genoa Peak, Goonmirk Range, Bonang, High Plains, Barry Mts., Mt. Cobbler); also N.S.W. (far south-east).

Perianth and branchlets *glabrous* or almost so (small hard-barked tree of far eastern Victoria):

**P. silvatica** L. A. S. Johnson in *Vict. Nat.* 73: 160 (1957).

*Vern.*: Forest Geebung. *Distr.*: Occasional in cool montane forest of far East Gippsland, where sometimes riparian (Bidwell on upper Delegate R., Goonmirk Range, Bendoc to Bonang, Howe Range.); also N.S.W. (south-east).

4. Leaves *pungent-pointed*, rigid, spreading, to 1" long, <1 mm. wide (*erect* bushy shrub 2-5 ft. high, typically of heathland):

**P. juniperina** Labill. *Nov. Holl. Plant. Specim.* 1: 33, t. 45 (1805).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 316 (1948); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 45, col. (1968).

*Vern.*: Prickly Geebung. *Distr.*: Widespread and often frequent on dry or damp heaths of western, southern and eastern Victoria, chiefly in the lowlands (e.g. Big & Little Deserts, Grampians, Lower Glenelg R., Portland district, Otways, Brisbane Range, Ocean Grove, Arthur's Seat, Frankston, Macclesfield, Tonimbuk, Bass R. valley, Waratah Bay, Wilson Prom., Providence Ponds, Freestone Ck., Sperm Whale Head, Wingan Inlet, Gabo Id), with an isolated north-eastern occurrence in the Mt. St. Bernard-Harrietville district; N.S.W., Tas., S.A.

Leaves *not pungent*, rarely <2 mm. wide (if ever slightly sharp and 1.5 mm. wide, then habit *prostrate*) 5

5. Perianth and foliage *glabrous* or almost so 7
- Perianth and under-surfaces of leaves *densely pubescent*; leaves minutely *papillose-scaberulous* above, with recurved margins 6
6. Indumentum *villous*; leaves <3 cm. long, manifestly *attenuated toward base* ( $\pm$  spatulate), spreading and  $\pm$  *curving upwards*; habit shrubby (3-5 ft.):

**P. rigida** R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 14 (1830).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 23 (1925); Burbidge, *Flor. Aust. Cap. Terr.* fig. 122 (1970).

*Vern.*: Hairy Geebung (Stiff Geebung). *Distr.*: Occasional on drier heaths and in sclerophyll eucalypt forests across northern Victoria, especially on rocky terrain of the auriferous belt (e.g. Little Desert, Grampians, St. Arnaud-Bealiba district, Whipstick Scrub near Bendigo, Maldon, Mt. Alexander, Mt. Ida near Heathcote, Benalla, Wangaratta, Chiltern, Mt. Buffalo ranges, Cravensville, Mt. Granya, Pine Mt. near Walwa), with an isolated far eastern occurrence at Dellicknora; N.S.W. (as far north as Castlereagh R.), A.C.T.

—Indumentum *short, velvety*; leaves 3-4 cm. long, obovate to elliptic, not much attenuated below; shrub or small tree (to 15 ft.) of north-eastern subalpine forests:

**P. subvelutina** L. A. S. Johnson in *Vict. Nat.* 73: 161 (1957).

*Vern.*: Velvety Geebung. *Distr.*: On shaded valley-slopes in montane to subalpine forest of the north-eastern highlands, and rare (Bogong, Big R. between Mts. Bogong & Nelse, between Harrietville & Mt. St. Bernard); N.S.W. (Kosciusko region), A.C.T.

7. Large shrubs or small trees of far eastern Victoria; bark loose, *red, laminated and papery*; leaves >1" long 9
- Small shrubs; leaves up to 1" long 8
8. Leaves *linear*, 1-2 mm. broad (widespread *decumbent* semi-shrub):

**P. chamæpeuce** Lhotsk. ex Meissn. in *DC. Prodr.* 14: 336 (1856).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3 t. 29 (1967); Mueller, *Key Syst. Vict. Plants* 2: fig. 68 (1886), also *Plants indig. Colon. Vict.* (Lithogr.): t. 69 (1864-65), as "*P. caleyi*"; Burbidge, *Flor. Aust. Cap. Terr.* fig. 121 (1970).

*Vern.*: Dwarf Geebung. *Distr.*: Scattered through highland forests of central and eastern Victoria from the Loddon R. eastwards, ranging between 1000 & 5500 ft. alt. (e.g. Creswick, Blackwood and Brisbane Ranges, Kinglake & Dandenong Ranges, Upper Jamieson, Howqua & Delatite Rivers, Mts. Buffalo & Cobbler, Barry Mts., Dargo & Bennison High Plains, Macallister R., Moroka R., Nunniong Plateau, Mt. Stradbroke, Amboyne Ck, Bonang, Bendoc, Cobboras, Limestone Ck, Tom Groggin, Pine Mt. near Walwa, Bogong); N.S.W. (as far north as Mudgee), A.C.T.

—Leaves *ovate-lanceolate to elliptic*, lustrous, 5-12 mm. broad (rare *erect* shrub of far eastern Victoria):

?**P. myrtilloides** Sieber ex Schult. & Schult. f. *Syst. Veg. Mant.* 3: 272 (1827)  
var. *brevifolia* Benth. *Flor. aust.* 5: 401 (1870).

*Vern.*: Myrtle Geebung. *Distr.*: Extremely localized and rare in Victoria where confined to far East Gippsland, on Yambulla Ck near its junction with Genoa R. at the New South Wales border (Dec. 1949); also N.S.W. (far south-east, among rocks in montane forest to 4000 ft. alt.).

[This taxon may be worthy of specific rank, differing from typical *P. myrtilloides* (on and north of the Blue Mts.) in its shorter, relatively broader leaves.]

9. Leaves *linear*, 1-2" long, 2-3 mm. wide:



*P. linearis* Andr. *Bot. Repos.* 2: t. 77, col. (1799).

*Illust.*: Andrews (*l.c.*); Rosser, *Wildflowers Vict.* 97, col. (1968).

*Vern.*: Narrow-leaf Geebung. *Distr.*: Restricted in Victoria to near-coastal heaths and foothill forests of East Gippsland, where rather frequent on sandy soils (e.g. Bruthen-Nowa Nowa Road, Lakes Entrance, Snowy R., Cann R., Mt. Kaye, Mt. Drummer, Wingan Inlet, Genoa Peak, Mallacoota, Howe Ranges, Upper Genoa R.); N.S.W., Qd (Stradbroke Id.).

—Leaves *narrow-lanceolate*, 2-4" long, <1 cm. wide (usually 7-8 mm.):

*P. lucida* R. Br. in *Trans. Linn. Soc. Lond.* 10: 161 (1810).

*Vern.*: Shiny Geebung. *Distr.*: Occasioned on near-coastal heaths of far East Gippsland, where co-extensive with *P. levis* (e.g. Wingan Inlet, Genoa district, Howe Ranges); also N.S.W.

[Field observation indicates that this population may be of hybrid origin, with female *P. linearis* and male *P. levis* (*q.v. seq.*) as parents; both species always occur near *P. lucida* in Victoria.]

—Leaves *broad-lanceolate*, 2-4" long, 1-3 cm. wide or more:

*P. levis* (Cav.) Domin in *Bibl. bot., Stuttgart* Heft 89: 28 (1921)—ut "*P. lævis*".

*Linkia levis* Cav. *Icon. & Descr. Plant.* 4: 61, t. 389 (1797);

*P. salicina* Pers. *Synops. Plant.* 1: 118 (1805).

*Illust.*: Cavanilles (*l.c.*); Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 11 fig. 1 (1913); Carey, *Proc. Linn. Soc. N.S.W.* 55: 716-17 (1930); Baillon, *Hist. Plant.* 2: 396 (1870)—all, except Cavanilles, as "*P. salicina*".

*Vern.*: Smooth Geebung (Willow Geebung). *Distr.*: Scattered on near-coastal heaths east of Cann R., far East Gippsland (e.g. Wingan Inlet, Genoa Peak, Mallacoota, Howe Ranges, Genoa R.); N.S.W. (northward to Hastings R.).

### ISOPOGON R. Br. ex Knight (1810)

Leaves forming *dense rounded tufts*, rigid, with *pungently-lobed segments*; outer bracts *longer than* floral bracts; flowers bright yellow contrasting with crimson bracts and leaf-bases (widespread semi-shrub <2 ft. high, often only 6");

*I. ceratophyllus* R. Br. in *Trans. Linn. Soc. Lond.* 10: 72 (1810).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 31 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 313 (1948); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 2, col. (1968).

*Vern.*: Horny Cone-bush. *Distr.*: A frequent component of sandy heaths in southern Victoria, on and west of Wilson Promontory (e.g. Waratah Bay, Quail Id in Western Port, Tonimbuk, Arthur's Seat & Frankston, Ocean Grove, Brisbane Range, Otways, Skipton, Mt. Richmond Nat. Park, Lower Glenelg R.), extending inland to the Dundas Range, Grampians, Little & Big Deserts; S.A., Tas. (eastern islands of Bass Strait).

Leaves *sparse*, with acute but *not pungent* segments; outer bracts *shorter than* floral bracts (rare Gippsland shrub often >2 ft., with  $\pm$  trailing stems):

**I. anemonifolius** (Salisb.) Knight *Cultiv. nat. Ord. Prot.* 93 (1809).

*Protea anemonifolia* Salisb. *Prodr. Stirp.* 48 (1796).

*Illustr.*: Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 10 fig. 2 (1913); Sulman, *Some Familiar Wild Flowers* t. 18 (1913); Cooke in Loddiges, *Bot. Cab.* 14: t. 1337, col. (1828).

*Vern.*: Drumstick Cone-bush (Tall Conebush). *Distr.*: Very localized in Victoria where almost restricted to scrubby heaths along railway line between Providence Ponds Ck and Fernbank Station, East Gippsland (by 1956 the colonies had been reduced to a few hundred individual plants, in danger of eventual extinction through clearing operations and repeated fires), but with small occurrence near State border N. of Howe Hill; N.S.W., Qd (Wallangarra on S.E. border with New South Wales).

[The Victorian population is referable to var. *tenuifolius* F. Muell. ex Benth. *Flor. aust.* 5: 347 (1870), with rather shorter narrow-linear segments to the leaves; in the typical, Port Jackson form the segments are linear to linear-cuneate and whole leaf up to 4" long.]

### ADENANTHOS Labill. (1805)

**A. terminalis** R. Br. in *Trans. Linn. Soc. Lond.* 10: 152 (1810).

*Illustr.*: Black, *Flor. S. Aust.* ed. 2: fig. 314 (1948); Engler, *Natürl. PflFam.* III 1: 136 fig. 95 (1888); Bauer in Endlicher, *Icon. Gen. Plant.* t. 110 (1838).

*Vern.*: Gland Flower. *Distr.*: On sandy Mallee heath of the Little and Big Deserts, extending west and north of Lake Albacutya almost to Ouyen, but rather uncommon everywhere and quite rare in the Wyperfeld Nat. Park; also S.A. (south-east areas to Kangaroo Id).

*Diagn.*: Spreading shrub 1-3 ft. high, the slender shortly hairy ramifications leafy and  $\pm$  ascending; leaves crowded, erect and  $\pm$  imbricate, 5-10 mm. long (the subtending floral leaves longer and villous), deeply and digitately cut into 3-5 terete segments, pubescent when young, glabrous with age; flowers few and sessile in terminal head-like clusters; perianth pale yellow,  $\pm$  15 mm. long, pubescent, swollen at base, the 4 free anther-bearing lobes 3-4 mm. long and reflexing at anthesis; style  $\pm$  15 mm. long, with spreading hairs on median part, arcuate, the stigmatic tip shortly cylindric and 1-1.5 mm. long; anthers sessile,  $\pm$  1.5 mm. long; fruit an ellipsoid, 1-seeded nut 2-3 mm. long, sessile within an involucre of 4 shining hypogynous scales or bracts.

### CONOSPERMUM Sm. (1798)

1. Leaves 2-5" long,  $\pm$  3 mm. wide,  $\pm$  erect; inflorescence >3" wide; perianth-limb whitish, about as long as tube:

**C. mitchellii** Meissn. in *DC. Prodr.* 14: 320 (1856).

*Illustr.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 33 (1967); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 101, col. (1968).

*Vern.*: Victorian Smoke-bush (Mountain Conosperm). *Distr.*: Heaths and open sandy forest tracts of S.W. Victoria (Grampians, Mt. Arapiles, Black Range, Dundas Range, Mt. Richmond Nat. Park, vicinity of Ink Pot & Moleside Ck on Lower Glenelg R.) where locally frequent, with an isolated easternmost occurrence in the Otways (near Lorne and Anglesea); also S.A. (south-east).

—Leaves <2" long; inflorescence  $\pm$  3" wide or less; perianth-limb < $\frac{1}{2}$  the length of tube 2

2. Leaves *spreading widely*, very narrow (to 1 mm.), the uppermost *far exceeded* by slender lower branches of inflorescence (plant of far western Victoria; flowers often bluish):

**C. patens** Schlechtendal in *Linnaea* 20: 587 (1847).

*Illust.*: Garnet, *Veg. Wyperfeld. Nat. Park* 54 fig. 12 n. 90 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 315 (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 67 (1886), also *Plants indig. Colon. Vict.* (Lithogr.): t. 70 (1864-65).

*Vern.*: Slender Smoke-bush (Slender Conosperm). *Distr.*: On drier heaths of far western Victoria and seldom common (Grampians, Mt. Zero, Black Range, Casterton district, Penola Rd. west of Dergholm, Little Desert, Nhill, Big Desert were rare); S.A. (as far west as Eyre Penins.).

—Leaves *ascending or erect*, 1.5-3 mm. wide, continuing onto lower branches of inflorescence (plant of extreme eastern Victoria):

**C. taxifolium** Sm. in Rees *Cyclopædia* 9: sub *Conospermum* No. 3 (1808).

*Illust.*: Hooker in *Curtis's bot. Mag.* 54: t. 2724, col. (1827); Engler, *Natürl. Pfl.-Fam.* III 1: 124 fig. 91 n (1888); Fitch in *Bentham, J. Linn. Soc. (Bot.)* 13: t. 2 fig. 11 (1873).

*Vern.*: Variable Smoke-bush. *Distr.*: Very localized in Victoria where restricted to heaths ("grass-tree plains") of the extreme south-east and known by only few collections, viz. mainland opposite Gabo Island (Sept. 1860), 3-4 miles west from Howe Hill (Dec. 1955 & Nov. 1969), also Little Ram Head (Aug. 1970); Tas. (east coast of George's & Spring Bays, Cape Barren Id), N.S.W., Qd.

#### GREVILLEA R. Br. ex Knight (1809)

1. Leaves *large and oak-like*, 4-8"  $\times$  1-3", with 3-7 deltoid and sharply pointed lobes (or sometimes entire), glabrous above, whitish-velvety beneath; flowers red, silky, numerous in a one-sided raceme 2-4" long; ovary villous (tall shrub or slender tree to 30 ft. in mountain-forest gullies of West Gippsland):

**G. barklyana** F. Muell. ex Benth. *Flor. aust.* 5: 436 (1870).

*Illust.*: Reeves in *Vict. Year Book* 76: t. inter 18 & 19 (1962), also in *Wild Life* 7: 208 (1945).

*Vern.*: Gully Grevillea (Large-leaf Grevillea). *Distr.*: Confined in Victoria to damp mountain-forest on eastern tributaries of the Bunyip R. (especially Ryson's Ck north of Labertouche), but locally rather common; also N.S.W. (coastal tract between Ulladulla and Jervis Bay, in light forest often bordering heathland).

—Leaves <4" long or, if >4", then *not* oak-like and without broad deltoid lobes (*never* forest trees) 2

2. Leaf *entire* (linear, oblong, elliptic, ovate or lanceolate) 13  
 Leaf *toothed or divided*, the segments  $\pm$  pungent-pointed 3

3. Leaves  $\pm 1''$  long, pinnate, the 3-7 linear segments each 1-2 mm. wide and so close together as to appear *almost digitate*; flowers pale crimson, silky, 1.5-2 cm. long, up to 20 (but often few) per short congested raceme; ovary and style *glabrous* (rigid, prickly desert shrub to 6 ft. high):

*G. huegelii* Meissn. in Lehm. *Plant. Preiss.* 1: 543 (1845).

*Illust.*: Garnet, *Veg. Wyperfeld Nat. Park* 40 fig. 5 n. 91 (1965); Mueller, *Key Syst. Vict. Plants* 2: fig. 70 (1886), also *Introd. bot. Teachings Schools Vict.* 51 (1877); Mueller, *Plants indig. Colon. Vict.* t. 71 (1864-65), as "*G. rigidissima*".

*Vern.*: Comb Grevillea. *Distr.*: Scattered through the Mallee region where formerly frequent on sandy ground in the Pine-Belah and Tall Mallee communities, but most of its natural range now cleared to wheat (e.g. near Berribee Tank, Yarrara State Forest, Sunraysia district and Kulkyn Nat. Park in Far North-west, Pine Plains, Wyperfeld Nat. Park where rare, Nyah West, Swan Hill; N.S.W., S.A., W.A.).

- Leaves either much  $> 1''$  long or the pinnæ (if present) not linear 4
- 4. Segments of leaves *narrow-linear* (to 3 mm. wide), usually *doubly grooved* beneath (sand-loving plants of north-western Victoria) 12
- Segments of leaves neither *narrow-linear* nor *doubly grooved* beneath 5
- 5. Raceme many-flowered, *narrow and spike-like* (sometimes forked), to 6 cm. long but  $< 1$  cm. wide; style *hairy throughout, hardly exceeding the small white perianth*; stigma erect, conical; leaves silky and lustrous beneath, flat, wedge-shaped, either with 3-lobed apex or whole leaf 2- to 3-times ternately lobed (rare bush of far north-eastern Victoria):

*G. ramosissima* Meissn. in DC. *Prodr.* 14: 388 (1856).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 124 (1970).

*Vern.*: Fan Grevillea (Branching Grevillea). *Distr.*: Not uncommon in Stringybark-Peppermint forest, growing among rocks, on Pine Mountain near Walwa (far N.E. Victoria), and presumably on other similar granitic ranges along the Upper Murray R.; also N.S.W. (table-lands as far north as Liverpool Plains), A.C.T.

- Raceme *broad*,  $> 1$  cm. wide; style almost or quite *glabrous, far exceeding the perianth* 6
- 6. Leaf *kite- or wedge-shaped* in outline, with a few lobes toward upper part (occasionally almost entire); indumentum on under surfaces short, dense, usually appressed and silky; perianth *sparsely pubescent*, on pedicel 2-4 mm. long; ovary silky, stipitate, the stalk 2-3 mm. long and with few,  $\pm$  *appressed hairs*; style  $\pm 16$  mm. long:

*G. ilicifolia* (R. Br.) R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 21 (1830).  
*Anadenia ilicifolia* R. Br. in *Trans. Linn. Soc. Lond.* 10: 167 (1810).

*Illust.*: Chaffer in Chisholm, *Etruscan* (Bank of N.S.W., Sydney) 11: 21, col. (Sept.-Dec. 1962); Black, *Flor. S. Aust.* ed. 2: fig. 325 (1948); Reeves, *Wild Life (Melb.)* 7: 210 (1945)—extreme forms; Ettinghausen, *Denkschr. Akad. Wiss. Wien* 15: t. 36 fig. 20 (1858).

*Vern.*: Holly Grevillea (Holly-bush—S.A.). *Distr.*: Occasional in western Victoria, on and between sand-hills almost throughout the Mallee excepting far N.W. portions (e.g. Little & Big Deserts, Wyperfeld and Kulkyn Nat. Parks—in stunted mallee scrub), with forms extending across the northern plains as far east as Bealiba district; S.A., N.S.W. (apparently restricted to Griffith district and uncommon).

[The var. *lobata* (F. Muell., *ut sp.*, 1855) Benth. *Flor. aust.* 5: 438 (1870) differs in having more deeply dissected leaves with *narrow lobes* and a *dull, fuzzy indumentum* of intricate hairs (resembling that in *G. aquifolium*); occurring also in South Australia, it once ranged across the Mallee from near Lake Hindmarsh and Pine Plains to Swan Hill and near Mt. Hope.

Even more remarkable is the var. *angustiloba* F. Muell. *Fragm.* 6: 212 (1868)—a *prostrate population*, distinguished further by its *very narrow and distant leaf-segments*. This extends from the western Grampians through the Little and Big Deserts, with an isolated occurrence at Puzzle Flat, Bealiba, and usually favours loamy flats between sand-hills; on the western fringe of the Victoria Range there has been found an extreme condition with needle-like pinnæ.

Transitions between var. *angustiloba* and the typical form of *G. ilicifolia* appear in parts of the Big Desert (e.g. near Lake Hindmarsh), while the latter form itself ranges in Victoria from the Little Desert through the Big Desert to Kulkyn National Forest in the Far North-west.]

—Leaf *not* kite-shaped in outline, usually lobed along most of its length; perianth *densely pubescent*; ovary and stalk (where present) *both densely villous* 7

7. Stems *erect* (often divaricately branching, but *never* trailing over ground) 9

Stems *prostrate*, widely trailing 8

8. Plant  $\pm$  *stout*, with branches and inflorescences *densely grey-villous*; leaves *sparsely hairy*, *deeply lobed*, reticulate beneath but not on upper-surfaces; floral bracts ovate, *hairy*, 4-10 mm. long, imbricate and *very conspicuous* until anthesis; pedicels 2-3 mm. long; style 8-10 mm. long;

### G. sp.

*Vern.*: Elphinstone Grevillea. *Distr.*: Apparently confined to auriferous tracts of Western Victoria and uncommon (Elphinstone State Forest between Drummond and Fryerstown, with a similar population in Enfield district south of Ballarat.).

—Plant *slender*, the branchlets almost glabrous and inflorescences *sparsely silky-hairy*; leaves almost *glabrous*, ovate to broadly oblong, with *broad very shallow lobes*, usually reticulate on both surfaces; floral bracts small (<4 mm. long),  $\pm$  *glabrous*, deciduous early; pedicels 4-5 mm. long; style 12-16 mm. long:

*G. repens* F. Muell. ex Meissn. in *Linnaea* 26: 355 (1854).

*Vern.*: Creeping Grevillea. *Distr.*: Apparently endemic in central Victoria, where occasional in Stringybark-Peppermint forests along the Dividing Range, often on stony ground (Wombat State Forest at Musk, Blackwood and near

Woodend, Kinglake Nat. Park at Steel's Ck. & Mason's Falls, Healesville, Upper Goulburn R. ranges near Flowerdale etc.).

9. Flowers >50 in a dense raceme 1-2" long; style *golden*; stigma *erect, shortly conical*; leaves regularly pinnatifid, the lobes simple to bi- or tri-dentate, the under-surfaces with *pale grey or whitish*, dull felty indumentum (uncommon divaricate bush or small tree of rocky terrain in more easterly highlands):

**G. sp.**

*Vern.*: Rock Grevillea. *Distr.* Apparently endemic in eastern and north-eastern Victoria where scattered, but locally frequent, on rocky valley-slopes and mountain rock-ledges between 2000 & 4000 ft. alt. (Cobungra, Bundarra R. & Livingstone Ck near Omeo, Corryong district, Reedy R. gorge on Nunniong tableland, Upper Buchan R. & Mt. Stradbroke near Wulgulmerang).

—Flowers <50 per raceme; style red; stigma an oblique disk; branches and under-surfaces of leaves with *dark greyish or ± ferruginous* indumentum (which is sometimes quite sparse) 10

10. Leaf *pubescent* on upper surface (with short curled hairs), its rounded primary lobes few and lobed again; flowers conspicuously *stalked*, often ± greenish; style ± 10 mm. long, quite glabrous:

**G. dryophylla** N. A. Wakefield in *Vict. Nat.* 73: 74 (1956).

*Illust.*: Garnet, *Veg. Wyperfeld Nat. Park* 46 fig. 8 n. 92 (1965), as "*G. ilicifolia*"; Reeves, *Wild Life (Melb.)* 7: 211 left-hand fig. (July 1945), as "*G. ilicifolia* var. *lobata*".

*Vern.*: Goldfields Grevillea. *Distr.*: Rather frequent in Box-Ironbark forests on many parts of the western goldfields, and apparently endemic in Victoria (e.g. St. Arnaud, Avoca, Inglewood, Bendigo, Maryborough, Castlemaine, Skipton)—formerly included with *G. ilicifolia* R. Br.

—Leaf ± *glabrous* on upper-surface; flowers often *sessile*; style 15-18 mm. long 11

11. Primary lobes of leaf 4-6, *again divided*, acute, the under-surfaces very shortly and ± *appressedly hairy*; inflorescence *silky-pubescent*; ovary on a stalk 2-3 mm. long; style ± *pubescent toward base*:

**G. steiglitziana** N. A. Wakefield in *Vict. Nat.* 73: 74 (1956).

*Illust.*: Reeves, *Wild Life (Melb.)* 7: 193 cover design, *col.* (July 1945), as "*G. ilicifolia* var. *lobata*".

*Vern.*: Brisbane Range Grevillea. *Distr.*: Endemic in the Brisbane Ranges, Victoria, where not uncommon on stony terrain in Box-Ironbark forest at Reilly's Ck gorge, near Steiglitz, on high ridge-top east of Mt. Wallace etc.

—Primary lobes of leaf up to 10 (rarely <6), *entire* or very seldom lobed again, the under-surfaces with ± *woolly indumentum* of intricate curled (rarely appressed and silky) hairs; inflorescence usually densely *woolly or villous*; ovary usually *sessile*; style *entirely glabrous*:

*G. aquifolium* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 178 (1838).

*Illust.*: Reeves in Swaby, *Victoria's Resources* 6\*: 53 (1964); Reeves in King, *Wild Life (Melb.)* 8: 68 (1946); Reeves, *Wild Life (Melb.)* 7: 211 right-hand fig. (July 1945); Ettingshausen, *Denkschr. Akad. Wiss. Wien* 15: t. 36 fig. 11 (1858), Rosser, *Wildflowers Vict.* 103, col. (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 102, col. (1968).

*Vern.*: Variable Prickly Grevillea. *Dist.*: Polymorphic and widespread on heaths and among sandstone rocks of western Victoria (Lower Glenelg R., Portland district, Coleraine, Dundas & Black Ranges, throughout Grampians where frequent, Little Desert, Anglesea-Wensleydale hills in northern Otways—an isolated atypical population; perhaps into far S.E. South Australia, but records at present lacking.

[On rocky slopes of the Grampians (e.g. Mt. Rosea) is an extreme form, having much more deeply dissected leaves with narrow segments. This was accorded varietal rank, as var. *attenuata*, by Meissner in *DC. Prodr.* 14: 378 (1856); but it grades into the normal, heathland form and its recognition is of doubtful merit—Bentham (1870) and all succeeding authors have ignored this population. Another almost prostrate form near Wartook Reservoir and other parts of the Grampian has leaves entire or with few to many shallow teeth. In ranges about 8 miles west of Anglesea is a population having stipitate ovaries and under-surfaces of leaves with an appressed silky indumentum; for the present, it seems best included under *G. aquifolium*.]

12. Shrub prostrate; leaf-lobes widely spreading; flowers reddish, in one-sided racemes 1-2" long; ovary and its stalk with short, appressed silky hairs:

*G. ilicifolia* (R. Br.) R. Br. var. *angustiloba* F. Muell. [See p. 40]

—Shrub erect, to 6 ft. high; leaf-lobes 2-3, almost erect; flowers creamy-white, in cylindrical spike-like racemes 2-4" long; ovary and its sheath densely but loosely villous:

*G. pterosperma* F. Muell. [See below]

13. Leaf-tip acute or obtuse and sometimes mucronate, but never pungent 22  
 Leaf-tip tapering into a pungent point 14  
 14. Ovary and style quite glabrous (or rarely the ovary sprinkled with minute hairs at very base) 19  
 Ovary pubescent or woolly 15  
 15. Leaves erect, needle-like, 3-6" long, doubly grooved beneath; flowers creamy-white, very numerous in erect, terminal, spike-like racemes 2-4" long (large shrub of desert sand-hills):

*G. pterosperma* F. Muell. in *Trans. phil. Soc. Vict.* 1: 22 (1855).

*Illust.*: Reeves, *Wild Life (Melb.)* 7: 207 (July 1945); Reeves, *Vict. Nat.* 58: t. 25 opp. 156 (1942), also 76: cover (Feb. 1960).

*Vern.*: Desert Grevillea. *Dist.*: Restricted in Victoria to the north-west, where occasional on sand-hills in the small and stunted mallee formations of the Big Desert, Wyperfeld Nat. Park, Cowangie-Murrayville districts and farther into the "Sunset Country", Kulkyn Nat. Park, Robinvale, but nowhere plentiful; N.S.W., S.A., W.A.

- Leaves spreading, <2" long, *not doubly grooved* beneath; flowers *red, pink or greenish*, few in short racemes to 1" long 16
16. Flowers *externally glabrous*; torus straight 18
- Flowers  $\pm$  *hairy* on the outside, at least toward apex 17
17. Leaves *narrowly oblanceolate to linear*, usually <4 mm. broad, the margins *strongly revolute*; flowers pink to coral-red, on pedicels 5-8 mm. long, *pubescent at apex*, the torus *very oblique* and ovary manifestly *stipitate* (shrub of far western Victoria):

*G. lavandulacea* Schlechtendal in *Linnaea* 20: 586 (1847).

*Illustr.*: Harrison, *Know Your Trees and Shrubs* t. 273, col. (1965); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 19, col. (1961); Swaby, *Your Garden* 10<sup>11</sup>: 10, col. (Dec. 1957); Black, *Flor. S. Aust.* ed. 2: fig. 328 (1948); Reeves, *Wild Life (Melb.)* 7: 208 (July 1945); Jarman, *Aust. Plant Drawings* n. 29 & 30 (1927); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 98, col. (1968).

*Vern.*: Lavender Grevillea. *Distr.*: Scattered through far western Victoria, chiefly among sandstone outcrops and on mallee heath, at the Black & Victoria Ranges, Little & Big Deserts, Wyperfeld Nat. Park, Pine Plains, with an isolated and restricted occurrence near Steiglitz in the Brisbane Range; N.S.W. (south-western interior), S.A.

[Victorian populations are almost entirely referable to the var. *sericea* Benth. *Flor. aust.* 5: 448 (1870), distinguished by its very narrow, *closely revolute* (almost terete) leaves which are *silky-hairy on both sides*; the more typical, South Australian form has been found within County Follett in the extreme south-western corner of Victoria.]

- Leaves *ovate-lanceolate to elliptic*, 1-2 cm. long, 4-6 mm. broad, almost *flat*, felted beneath with short grey hairs; flowers *sessile* on a conspicuously *one-sided raceme*, sparsely hairy all over; torus *straight*; ovary virtually sessile (very rare plant of Grampians):

*G. williamsonii* F. Muell. in *Vict. Nat.* 10: 129 (1893).

*Vern.*: Serra Grevillea. *Distr.*: Endemic in the Victorian Grampians, where extremely rare and known only from the type locality (on Picaninny Hill between Mts. Abrupt and Sturgeon—last collected there in Dec. 1893).

[Type was from a single plant destroyed in a fire during 1897, and no other comparable individual has been observed since then. Affinities are with *G. aquifolium*, and it is possible that *G. williamsonii* was a mutant of this species or part of a hybrid population.]

- As for the last, but leaves >2 cm. long and >6 mm. broad, some often developing a few marginal teeth (prostrate plant near Wartook Reservoir and other parts of Grampians):

*G. aquifolium* Lindl.—forma [See p. 42]

18. Leaves scabrid and  $\pm$  shining above, *glabrous and glaucescent* on undersurfaces, *ovate-lanceolate to somewhat oblanceolate* flowers pale,



*greenish* when alive (drying purplish), in short leafy terminal clusters on pedicels 4-6 mm. long; style 5-7 mm. long ( $\pm$  verticillately branching in shrub 3-9 ft. high, on ranges of far Upper Murray):

*G. jephcottii* J. H. Willis in *Muelleria* 1: 117 (1967).

*Vern.*: Green Grevillea. *Distr.*: As far as known, endemic on Pine Mountain (S.E. of Walwa) in the far Upper Murray region of N.E. Victoria, but plentiful there at an altitude of 2000-3000 ft. and possibly extending to similar granite ranges in the vicinity.

—Leaves softly *hairy* on both surfaces, *linear* to narrowly oblanceolate; flowers *red or pinkish*, in short but distinct and *exserted racemes*, on pedicels >6 mm. long; styles >8 mm. long (eastern and often riparian shrub):

*G. lanigera* A. Cunn. ex R. Br. [See p. 45]

19. Perianth quite *glabrous externally* (but bearded inside), *greenish, creamy, pink or crimson*,  $\pm$  7 mm. long, 4-5 mm. wide; style  $\pm$  15 mm. long; leaves variable, from oblanceolate-linear and almost flat to needle-like with completely revolute margins:

*G. rosmarinifolia* A. Cunn. in *Field Geogr. Mem. N.S.W.* 328 (1825).

*Illust.*: Harrison, *Know Your Trees and Shrubs* t. 277, col. (1965); *Aust. Plants* 3<sup>11</sup>: 16, col. (Dec. 1964); Reeves, *Wild Life (Melb.)* 7: 209 (1945), also 9: 223 (1947); Ewart, *Flor. Vict.* 413 fig. 175 (1931); Audas, *One of Nature's Wonderlands* 60 (1925); Charsley, *Wild Flowers Melb.* t. 10 fig. 3, col. (1867), as "*G. Latrobei*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 310, col. (1968).

*Vern.*: Rosemary Grevillea. *Distr.*: Excepting the Otways, southern Gippsland and alpine region, scattered throughout Victorian highlands from the Gramians to sources of the Murray River, chiefly on rocky terrain but seldom abundant (e.g. in such dispersed localities as Mt. Arapiles, Mt. Cole, Whipstick Scrub near Bendigo, Mt. Tarrengower, Fryerstown & Hepburn, Skipton, Brisbane Range, near Melton, Plenty R. ranges, Euroa, Beechworth, Buffalo R. ranges, Mt. Granya, Pine Mt., Tom Groggin, headwaters of Buchan & Suggan Buggan Rivers), with more isolated far western occurrences on sand at Wilkin and in Little Desert (small form with fine needle-like foliage); also N.S.W. (as far north as Bathurst).

—Perianth *hairy* on the outside, to 5 mm. long, <3 mm. wide; style <10 mm. long (often only 5 mm.)

20. Inflorescence <1 cm. long; flowers *whitish*, minute, strongly scented; leaves  $\pm$  1 cm. long, *simply concave beneath* where appressedly silky-pubescent, the *mid-vein indistinct* (alpine shrub):

*G. australis* R. Br. in *Trans. Linn. Soc. Lond.* 10: 171 (1810).

*Illust.*: Mass, *Flowers aust. Alps* 49 (1967).

*Vern.*: Alpine Grevillea. *Distr.*: Alpine heath, herbfield and subalpine woodland of the eastern highlands in Victoria, where locally frequent, and seldom found below altitudes of 4500 ft. (e.g. Baw Baws, Mt. Skene, Bennison High

Plains, Haidinger Range, Mts. Buller & Stirling, Barry Mts., Mt. Buffalo, Dargo & Bogong High Plains, Davey's Plain, Cobboras, Nunniong Plateau & near Wulgulmerang; Tas., N.S.W., A.C.T.

[A form on higher peaks in the Bogong region (e.g. Mts. Feathertop and Nelson) is distinguished by dwarf size (to 1 ft. high) and relatively *broad*,  $\pm$  *elliptic leaves*; it extends also to New South Wales and Tasmania whence it was probably first described, either as the var. *brevifolia* by J. D. Hooker in *Lond J. Bot.* 6: 282 (1847) or var. *montana* Hook f. (*l.c.*.)]

- Inflorescence  $>1$  cm. long; flowers *pink to purplish*; leaves  $\pm 2$  cm. long, *doubly grooved beneath*, with *prominent almost glabrous mid-vein* 21  
21. Flowers  $<20$ , almost sessile in a *loose cluster*; perianth *pale pink*,  $\pm 4$  mm. long, the style far exceeding it:

*G. parviflora* R. Br. in *Trans. Linn. Soc. Lond.* 10: 171 (1810).

*Vern.*: Small-flower Grevillea. *Distr.*: Excepting basalt areas, scattered over rocky parts of Victoria from sea-level to the subalps, but rarely plentiful (e.g. Mt. Clay near Portland, Grampians, Skipton, Creswick where very rare, Vaughan, Brisbane Range, Dargo High Plains, Mt. Buffalo, Cobungra, Upper Buchan River, Wulgulmerang Ck, Snowy R., Cann R., Genoa R., Wingan & Malla-coota Inlets where a more robust bush to 6 ft. high); S.A. N.S.W. (to Blue Mts.).

- Flowers  $>20$  in a *dense compact raceme*, the axis  $\pm$  elongated; perianth *reddish-purple*,  $\pm 5$  mm. long, the style not much longer (rare shrub of Grampians):

*G. confertifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 22 (1855)

*Vern.*: Grampians Grevillea (Dense-leaf Grevillea). *Distr.*: Endemic in the Victorian Grampians, among sandstone rocks in higher damp situations (Summit of Mt. William & Major Mitchell Plateau at 3500-3800 ft. alt., Mt. Difficult, Dead Bullock Ck near Rose's Gap, Victoria Range).

22. Ovary and style *glabrous* (mountain plants with scarlet, rarely pink flowers) 26  
Ovary densely *villous* 23  
23. Perianth *glabrous externally* (but villous internally), red; raceme short and loose; leaves linear (or narrow-lanceolate), pubescent on both surfaces and  $\pm$  scabrid above:

*G. lanigera* A. Cunn. ex R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 21 (1830).

*Illust.*: Reeves, *Wild Life (Melb.)* 7: 210 (July 1945); Burbidge, *Flor. Aust. Cap. Terr.* fig. 125 (1970).

*Vern.*: Woolly Grevillea. *Distr.*: Widespread in eastern and north-eastern Victoria, from coastal heaths to subalpine woodlands (Tyers R., Traralgon, Wilson Prom., Dutson, Sale & Bairnsdale districts, Briagolong & Freestone Ck, Snowy R., Cann R. to Malla-coota, Gabo Id, Nunniong Plateau, Wulgulmerang & Wombargo Range, Cobboras, Omeo district & Cobungra, Mitta Mitta, Cravensville, Mt. Granya, Bogong, Buffalo R., near Beechworth); also N.S.W. (at least as far north as Camden).

[In eastern Victoria (e.g. along Yarra, Goulburn and Upper Murray Rivers) a widespread riparian population has characters almost intermediate between those of *G. lanigera* and *G. rosmarinifolia*, with the same *tapering, pungent, less hairy leaves* of the latter species but very hairy ovaries of the former; this may be referable to *G. ericifolia* R. Br., of uncertain distinctiveness, but is treated here as a variant of *G. lanigera*.]

—Perianth *pubescent externally* as well as on the inside 24

24. Flowers *wholly deep red*, 20-30 in a *dense cluster*, each on a slender hairy pedicel to 1 cm. long but subtended by *prominent hairy bracts* when young; leaves 3-5 cm. long (localized shrub, 4-6 ft., of north-eastern hills):

*G. polybractea* H. B. Williamson in *Vict. Nat.* 44: 139, 141 fig. B & D (1927).

*Illustr.*: Williamson (*l.c.*).

*Vern.*: Crimson Grevillea. *Distr.*: Confined in Victoria to granitic terrain of the far north-east, but locally plentiful (Granya Gap near Tallangatta, Burrowye & Corryong districts, Biggara on Upper Murray R. above Towong); also N.S.W. (sources of the Macquarie R. near Dubbo).

—Flowers orange-red, pink, yellow or greenish, <20 per raceme (often <10) and *loosely arranged* 25

25. Leaves 1-2 cm.  $\times$   $\pm$  3 mm., extremely variable in shape (from linear to almost rotund), often small and usually densely pubescent on upper surfaces; flowers *sparsely pubescent, on slender pedicels* in loose clusters, variously coloured but usually *orange-red or pinkish* (widespread mountain and goldfields shrub):

*G. alpina* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 178 (1838).

*Illustr.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 34 (1967); Reeves, *Wild Life (Melb.)* 7: 208-209 (July 1945); Dickins in Pescott, *Native Flowers Vict.* t. opp. 64, col. (1914); Fitch in *Curtis's bot. Mag.* 83: t. 5007, col. (1857), as "*G. alpestris*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 311, col. (1968).

*Vern.*: Cat's Claws (Mountain Grevillea). *Distr.*: Excepting far East Gippsland and Otways, widespread through the Victorian highlands and frequent on western auriferous tracts (e.g. in such disjunct areas as Black Range & Grampians, St. Arnaud, Whipstick Scrub, Taradale, Heathcote, Lerderderg Gorge, Emerald, Cathedral Range, Tallarook, Rushworth, Warby Range, Rutherglen, Beechworth, Buffalo ranges, Howqua R., Bogong, Limestone Ck, Nowa Nowa); N.S.W. (Albury district and perhaps other parts of Upper Murray), A.C.T.

[Under his original description (*l.c.*) of *G. alpina*—based on material from Mt. William in the Grampians—Lindley distinguished two variants: one with *erect* branches and narrow leaves, the other having *diffuse* branches with shorter leaves (about  $\frac{1}{2}$ " long). The latter was accorded specific rank, as *G. alpestris*, by Meissner in *DC. Prodr.* 14: 361 (1856); but this view has not been supported in Bentham's *Flor. aust.* 5: 441 (1870), nor by most subsequent authorities. P. F. Morris in *Vict. Nat.* 51: 207 (1935) resurrected the name *G. alpestris*, applied it to a highly variable population extending far beyond the Grampians (through all the central goldfield areas to ranges near Mt. Buffalo), and attempted to prove its specific

distinctiveness from *G. alpina* in the strictest sense. The criteria emphasized by Morris (habit, indumentum of leaf-surfaces, tip of hypogynous gland) are all so inconstant, even within a small area, that for purposes of this key it has not been found practicable to recognize even well-marked varieties within the complex. A rather distinctive population with small flowers and very short styles (6-8 mm. long) occurs in Chiltern district, extending to Albury and Canberra; it has been erroneously referred to *G. lanigera*.]

—Leaves 1-3 cm. long, 5-15 mm. wide, minutely scaberulous on upper surfaces but densely felted with hairs beneath; flowers *densely felty-pubescent, on short and thick pedicels* in small  $\pm$  dense clusters, *greenish to golden* (very localized heathland shrub):

***G. chrysophæa*** F. Muell. ex Meissn. in *DC. Prodr.* 14: 361 (1856).

*Illust.*: Reeves, *Wild Life (Melb.)* 7: 209 (July 1945); Williamson, *Vict. Nat.* 44: 141 fig. A (1927).

*Vern.*: Golden Grevillea. *Distr.*: Apparently endemic in Victoria, where localized on heaths and in open sandy forest land of Gippsland between Traralgon and Sperm Whale Head (Wron Forest near Woodside, Strzelecki Ranges, Merriman's Ck, Rosedale, Providence Ponds, Valencia Ck), with an isolated western occurrence on Tertiary cappings of the Brisbane Range near Steiglitz.

26. Axis of raceme to 1 cm. long; style *greatly exceeding the perianth*; leaves to 4" long, very variable in width (2-15 mm.); the mid-vein prominent beneath and *glabrous* (Grampians shrub):

***G. dimorpha*** F. Muell. in *Trans. phil. Soc. Vict.* 1: 21 (1855).

*Illust.*: Harrison, *Know Your Trees and Shrubs* t. 275, col. (1965), as "*G. oleoides* 'Dimorpha'"; Galbraith, *Wildflowers Vict.* ed. 3; t. 35 (1967), as "*G. oleoides*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 93, col. (1968).

*Vern.*: Flame Grevillea (Olive Grevillea). *Distr.*: Endemic in western Victoria, where scattered and locally frequent on heaths and open sandy forest tracts throughout the Grampians (Mt. Abrupt, Yarram Gap, Pomonal to Hall's Gap, Scrubby Ck, northern Victoria Range), also at Mt. Cole in southern Pyrenees.

[*G. oleoides* of New South Wales, to which *G. dimorpha* was referred by Bentham (l.c.) and subsequent authors, differs in its more uniform foliage with longer and broader individual hairs (discernible at magnifications of  $\pm$  100), more numerous flowers per inflorescence (commonly 12-16), longer floral stipes ( $\pm$  3.5 mm.) and longer pistils (commonly 30 mm. or more in mature flowers).]

—Axis of raceme >1 cm. long; style *hardly exceeding perianth*; mid-vein on under-surface of leaf *pubescent* (eastern highland shrubs) 27

27. Leaves *lanceolate to oblanceolate*, up to 4 x 1", their upper-surfaces *glabrous and usually shiny*, the under-surfaces invested with *appressed, shining, often silvery hairs* that obscure the lamina; perianth with few or many  $\pm$  *appressed hairs*:

***G. victoriae*** F. Muell. in *Trans. phil. Soc. Vict.* 1: 107 (1855).

*Illust.*: Stones in *Victoria's Resources* 6\*: cover, col. (June 1964), also *Aust. Plants*

3<sup>21</sup>: 16, col. (Dec. 1964) as "*G. oleoides*"; Reeves, *Wild Life (Melb.)* 7: 209 (July 1945); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 506, col. (1968); Mass, *Flowers aust. Alps* 49 (1967).

*Vern.*: Royal Grevillea. *Dist.*: Widespread among rocks in subalpine woodland of eastern and north-eastern Victoria, rarely below 4000 ft. alt., and often locally frequent (Lake Mt. & Mt. Torbreck, Mts. Buller & Stirling, Barry Mts., Mt. Buffalo, Bogong High Plains, Mt. Hotham, Mt. Tambo, Cobboras, Wombargo Range, Nunniong Plateau, near W Tree, Mt. Tingaringy); also N.S.W. (southern parts of Dividing Range).

[The var. *leptoneura* Benth. *Flor. aust.* 5: 468 (1870) differs in having smaller (3.6 × 0.5-1 cm.), more obtuse leaves, with veins much *less conspicuous* and under-surfaces more *sparsely hairy* than in the typical form; its perianths also are smaller and more slender (10-15 × 1-2 mm.). This population favours damp shaded situations at rather lower altitudes than typical *G. victoriae*, and has been found in Victoria near the heads of the Taggerty, Thompson, Cann, Genoa and Wallagarough Rivers.

A puzzling intermediate form appears to connect var. *leptoneura* with the next species (*G. miqueliana*) in Walhalla district.]

—Leaves *oval to broadly elliptic*, about 2 × 1", their upper-surfaces *dull and scabrid* with short erect hairs, the under-surfaces with a *loose grey to brownish vestiture* of erect or spreading hairs; perianth with copious but ± loose rusty indumentum of *spreading hairs*:

*G. miqueliana* F. Muell. in *Trans. Vict. Inst.* 132 (1855).

*Vern.*: Oval-leaf Grevillea. *Dist.*: Occasional in montane forest and subalpine woodland of east-central and far eastern Victoria, south of the Dividing Range (Walhalla, Mt. Useful, heads of Macallister R., Moroka R., Mt. Wellington, Mt. Angus & Castle Hill, Back Ck in Cann R. district, Ingeegoodbee R. below Cobboras Mts. at 5000 ft. alt.); also N.S.W. (isolated in upper Tuross R. region).

[Silky Oak, *G. robusta* A. Cunn. ex R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 24 (1830), ranges from the north-eastern rivers of New South Wales into southern Queensland. Although this valuable timber-tree is not naturalized anywhere in Victoria, it is very widely planted for ornament in avenues, parks and private gardens throughout the lowlands of the State. The broad bipinnate leaves are 6-8" long, with numerous lanceolate lobes each up to 1" long, glabrous above but with appressed silky hairs beneath, and the foliage is often partially deciduous during spring. The golden to orange flowers, opening in December, are on the upper side of showy horizontal racemes 3-6" long.]

#### HAKEA Schrad. & J. Wendl (1797)

1. Leaves *terete* or almost so (but some lower leaves occasionally ± flattened), often *pungent-pointed*, the *venation obsolete* or lacking 4  
Leaves *quite flat*, lanceolate or linear, with at least the *mid-vein apparent* 2
2. Leaves about 3-5 × ½", narrow-elliptic to lanceolate, rather lustrous, *only the mid-vein conspicuous*; flowers silky; fruit ± 2.5 × 1.5 cm.; stigma a *lateral disk* (small eastern tree 10-20 ft.):

*H. eriantha* R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 29 (1830).

*Illust.*: Rossiter in Ewart, *Handb. For. Trees* t. 29 (1925); Flockton in Maiden *For. Flor. N.S.W.* 5: t. 175 (1912).

*Vern.*: Tree Hakea. *Distr.*: Scattered through the eastern highlands between Walhalla district and the N.S.W. border, usually in cool montane forest (to 3000 ft.) and uncommon north of Dividing Range (e.g. Upper Jamieson R., heads of Avon R., Valencia Ck, Dargo & Tambo R. valleys, Bairnsdale & Nowa Nowa districts, W Tree & Snowy R. gorge, Wulgulmerang, Mallacoota Inlet, Genoa R., Howe Range, Bonang, Mitta Mitta R., Bogong); N.S.W., Qd (far S.E. near Wallangarra), records for W.A. being erroneous.

—Leaves with 3 or more parallel veins (if apparently 1-veined when narrow-linear, then the flowers glabrous and fruit <1 cm. wide); stigma usually an erect cone

3. Leaves lanceolate, not pungent, usually glabrous, 2-4" long, with 3 or more bold parallel veins (and intervening reticulate venation); perianth glabrous, pedicels pubescent; fruit  $\pm$  2-3  $\times$  1.5 cm., not acuminate at maturity (tall rare shrub of far east):

*H. dactyloides* (J. Gärtn.) Cav. in *An. Hist. nat., Madrid* 1: 215 (1800).  
*Banksia dactyloides* J. Gärtn. *Fruct. & Semin. Plant.* 1: 221, t. 47 fig 2 (1788).

*Illust.*: Gärtner (*l.c.*); Fitch in *Curtis's bot. Mag.* 66: t. 3760, col. (1839); Flockton in Maiden, *For. Flor. N.S.W.* 5: t. 179 (1912); Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 7 fig. 2 (1913); Miller in Banks & Solander, *Ill. aust. Plants Cook's Voy.* 3: t. 267 (1905).

*Vern.*: Finger Hakea. *Distr.*: Confined in Victoria to granitic areas of far East Gippsland and rare (Mt. Kaye near upper Cann R., Mallacoota Inlet & Howe Range); N.S.W., Qd (far S.E. near Wallangarra).

—Leaves linear to almost filiform, pungent-pointed, sometimes  $\pm$  silky-pubescent (far western forms), 1-8" long, 1- to 7-nerved; perianth and pedicels both glabrous; fruit 1.5-2  $\times$  0.5-1 cm., acuminate:

*H. ulicina* R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 29 (1830).

*Illust.*: Charsley, *Wild Flowers Melb.* t. 10 fig. 4 col. (1867); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 12, col. (1968).

*Vern.*: Furze Hakea. *Distr.*: Widespread and rather frequent on sandy heaths of western and southern Victoria from Lower Glenelg R. to N.S.W. border (e.g. Little Desert, Black Range & Grampians, Portland district, Irrewillipe, Otways, Brisbane Range, Mornington Penins., Quail Id, Dandenongs, Beaconsfield, Healesville & Powelltown, Foster, Wilson Prom., Bruthen-Buchan road, Cann R., Wingan Inlet Nat. Park, Genoa); Tas. (Bass Strait islands), N.S.W., S.A. (as far west as Mt. Lofty).

[J. M. Black in *Trans. roy. Soc. S. Aust.* 54: 59 (1930) described the var. *latifolia*, from Ninety-mile Desert near the Coorong, S.A. This population is distinguished by having oblong-cuneate, prominently 3-nerved leaves 4-13 mm. broad; it appears also in south-western Victoria—along the Lower Glenelg R. and in the Grampians—but merges so insensibly into co-extensive narrow-leaved conditions of the species that varietal recognition is hardly warranted.]

—As for the last, but fruit *blunt* and stigma an *oblique disk* (never erect and cone-like):

**H. microcarpa** R. Br. [See p. 53]

4. Perianth *glabrous* (but sometimes with a few hairs around its base) 8  
Perianth *pubescent* 5
5. Fruit  $\pm$  *sigmoid* (S-shaped), with *long incurved apex* (far western plants) 7  
Fruit *not sigmoid*, without any long incurved apex 6
6. Leaf-tip always *straight*; flowers *villous*, appearing in summer; fruit *narrow, dagger-shaped*, 2.3  $\times$  0.5 cm., with a *ring of sharp tubercles* below the middle (divaricate shrub to 6 ft., flowering Nov.-Jan.):

**H. teretifolia** (Salisb.) J. Britt. in *J. Bot., Lond.* 54: 60 (1916).

*Banksia teretifolia* Salisb. *Prodr. Stirp.* 51 (1796);

*H. pugioniformis* Cav. in *An. Hist. nat., Madrid* 1: 213, t. 11 (1800).

*Illust.*: Cavanilles (*l.c.*), also *Icon. & Descr. Plant.* 6: t. 533 (1801); Sulman, *Some Familiar Wild Flowers* t. 50 (1913); Banks & Solander, *Ill. aust. Plants Cook's Voy.* 3: t. 265 (1905); Meredith, *Bush Friends Tasm.* last ser.: t. 10, col.—lower right hand fig. (1891)—all as "*H. pugioniformis*"; Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 13, col. (1968).

*Vern.*: Dagger Hakea. *Dist.*: Locally frequent on damp near-coastal heaths of eastern Victoria (near Dandenong Ranges, Tonimbuk, Western Port, Wilson Prom., Port Albert, Cann R., Genoa & Mallacoota), with isolated western occurrences in the Grampians; Tas., N.S.W., Qd (south-eastern region).

—Leaf-tip often *uncinate* (in adult leaves), the young foliage  $\pm$  hoary-silky; flowers few, with *short appressed hairs*, opening in spring; fruit *broad, smooth*, 2.3  $\times$  1.5 cm., with dark longitudinal stripe along each suture (small tree of north-west, flowering Sept.-Oct.):

**H. vittata** R. Br. in *Trans. Linn. Soc. Lond.* 10: 182 (1810).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 29 (1925); Flockton in Maiden, *For. Flor. N.S.W.* 6: t. 206 (1915); Myers in Turner, *Forage Plants Aust.* t. opp. 88 (1891), as "*H. leucoptera*"; Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 150, col. (1968).

*Vern.*: Hooked Needlewood (Striped Hakea). *Dist.*: Scattered across northern Victoria, on sandy or loamy plains from the extreme N.W. to Nathalia district, but occurrences now much reduced through land clearing for agriculture (e.g. Lindsay Point, Merbein, Timberoo, Kulkyne & Wyperfeld Nat. Parks, near Lakes Corong, Albacutya & Hindmarsh, Horsham & Avoca districts, Richardson R., Nyah West, Swan Hill); S.A., N.S.W., Qd (south-western interior).

[The var. *glabriflora* J. M. Black ex J. H. Willis in *Vict. Nat.* 73: 150 (1957) differs from the typical and usual form only in its totally *glabrous perianth*, but scattered centrfixed hairs beset the pedicel as usual. This population is known from Victoria only in the Mallee north of Rainbow (Oct. 1898)—probably near Pine Plains Stations—but it occurs also at Stirling East in the Mt. Lofty area, S.A.]

7. Leaves 2-6" long, *ascending*; flower clusters 1 cm. long or more; style slender, much *longer than perianth*; fruit 3-4 cm. long (shrub 3-6 ft. high):

**H. rostrata** F. Muell. ex Meissn. in *Linnæa* 26: 359 (1854).

*Illust.*: Garnet, *Veg. Wyperfeld Nat. Park* 40 fig. 5 n. 96 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 320 (1948); Ewart, *Flor. Vict.* 405 fig. 173 (1931); Schoenfeld in Ewart, *Plants indig. Vict.* t. 74 opp. 11 (1910); Mueller, *Key Syst. Vict. Plants* 2: fig. 71 (1886), also *Introd. bot. Teachings Schools Vict.* 53 (1877).

*Vern.*: Beaked Hakea (Turkey-gobblers). *Distr.*: Locally frequent on sandy heaths of far western and south-western Victoria, including Mallee heath (Wyperfeld Nat. Park, Big & Little Deserts, Grampians, Black & Dundas Ranges, Poolaigelo, Lower Glenelg R., Mts. Kincaid, Richmond & Clay near Portland); S.A., Tas. (George Bay on E. coast).

—Leaves  $\pm 1''$  long, spreading *almost at right angles* to stem; flower clusters  $<1$  cm. long; style about *as long as perianth*; fruit  $\pm 2$  cm. long (low shrub to 2 ft. high):

**H. rugosa** R. Br. in *Trans. Linn. Soc. Lond.* 10: 179 (1810).

*Vern.*: Dwarf Hakea (Wrinkled Hakea). *Distr.*: Occasional on heaths of far western Victoria, where sometimes co-extensive with *H. rostrata* (Big & Little Deserts, Grampians, Mt. Bepcha, Black Range, Dergholm & Poolaigelo), with isolated occurrences in Whipstick Scrub north of Bendigo and on declivities around sources of Macalister R. (Gippsland); also S.A. (as far west as Eyre Penins.).

- |                             |    |
|-----------------------------|----|
| 8. Pedicels <i>glabrous</i> | 11 |
| Pedicels <i>pubescent</i>   | 9  |

9. Inflorescence  $<1$  cm. long; flowers *minute, yellow*, with curious seaweed-like odour, opening Apr.-Aug.; leaves pale yellowish-green, rather soft, pointed but hardly pungent, the lower sometimes short and flattened; fruit large ( $2-3 \times 1-2$  cm.), often verrucose:

**H. nodosa** R. Br. in *Trans. Linn. Soc. Lond.* 10: 179 (1810).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 28 (1925); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 11, col. (1968).

*Vern.*: Yellow Hakea. *Distr.*: Locally frequent on swampy southern heaths from the Lower Glenelg R. to Bruthen district (e.g. Mts. Clay & Richmond, Grampians, Port Fairy, Kinglake & Dandenong Ranges, Emerald, Tonimbuk, Mornington Penins., Yallourn, Foster, Wilson Prom., Sperm Whale Head); S.A. (south-east), Tas. (Flinders, Cape Barren & Clarke Is, George Bay).

—Inflorescence 1 cm. long or more; flowers white or pink 10

10. Leaves *divaricate*; flowers  $<6$  per cluster; fruit with *two  $\pm$  equal layers of wood* (the outer paler) opposite seed-cavity; seed *rugose* (wide-spread bushy shrub to 10 ft., divaricately branched, flowering July-Sept.):

**H. sericea** Schrad. & J. Wendl. *Sert. Hannov.* 27 (1797).

*Illust.*: Harrison, *Know Your Trees and Shrubs* t. 287, col. (1965); Webster in



*Curtis's bot. Mag.* 170: new ser. t. 229, col. (1954), as "*H. tenuifolia*"; Brooks, *Aust. native Plant.* t. opp. 81 (1959); Galbraith, *Wildflowers Vict.* t. 32 (1967); Audas, *Native Trees Aust.* 221 (1934), also *One of Nature's Wonderlands* 77 (1925); Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 7 fig. 1 (1913); Stead, *Tree Book* n. 2: 88 (1933)—last two as "*H. acicularis*".

*Vern.*: Bushy Needlewood (Needle-Bush, Silky Hakea). *Distr.*: Except for the north-east and far south-west, the most widely distributed species of *Hakea* in Victoria, occurring plentifully in forest-land on a variety of soils from the Grampians to the Howe Ranges (e.g. Wedderburn, St. Arnaud & Bealiba, Daylesford, Lerderderg Gorge, Graytown, Brisbane & Otway Ranges, Kinglake & Dandenong Ranges, Upper Jamieson R., Warburton, Nar Nar Goon, Mornington Penins., Traralgon, Wilson Prom., Canni Ck near Bruthen, Mt. Kaye & Cann R., Mt. Drummer & Wingan Inlet); N.S.W., A.C.T., Tas. (Flinders & Cape Barren Is); now naturalized in New Zealand (Auckland district), Spain, Portugal, S. Africa (where a noxious weed).

—Leaves *rigidly upright*, straight-pointed; flowers >6 per cluster; fruit with only a *single layer of wood* opposite seed-cavity; seed almost *smooth*,  $\pm$  *longitudinal* in follicle (alpine shrub with regularly ascending branches, flowering Dec.-Jan.):

*H. lissosperma* R. Br. in *Trans. Linn. Soc. Lond.* 10: 180 (1810).

*H. sericea* Schrad. & J. Wendl. var. *lissosperma* (R. Br.) Maiden & Betche *Cens. N.S.W. Plant.* 61 (1916).

*Illust.*: Meredith, *Bush Friends Tasm.* last ser.: t. 10, col.—left hand fig. (1891).

*Vern.*: Mountain Needlewood. *Distr.*: Restricted in Victoria to the more easterly highlands above 4000 ft. usually in rocky parts of subalpine woodland where locally frequent but in relatively few, quite isolated localities (sources of Macalister R., Mt. Buffalo, Mt. St. Bernard, Cobbosar Mts., Nunniong Plateau near Diggers' Holes); N.S.W. (Kosciusko region), Tas.

—As for the last, but a small North-west Mallee tree with seed (and wing)  $\pm$  *diagonal* in follicle; adult foliage often uncinat; flowers appearing Sept.-Oct.:

*H. vittata* R. Br. var. *glabriflora* J. M. Black ex J. H. Willis  
[See p. 50]

11. Flowers *numerous* (20 or more), on pedicels 4 mm. long, shortly *racemose* (the axis of inflorescence 6-15 mm. long); leaves to about 3"  $\times$  1.5 mm., *always terete*, often hoary-pubescent; fruit 2.3  $\times$  1.5-2 cm.; seed-wing *whitish* (desert shrub or small tree, flowering Dec.):

*H. leucoptera* R. Br. in *Trans. Linn. Soc. Lond.* 10: 180 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 318 (1948); Rossiter in Ewart, *Handb. For. Trees* t. 26 (1925); Cannon, *Publ. Carnegie Instn* n. 308: tt. 11, 12, 28 & 30 (1921).

*Vern.*: Silver Needlewood (Needle Hakea, Water-tree, Kulua—aborig. Lake Eyre region). *Distr.*: Scattered through the Mallee region of N.W. Victoria, usually in cypress-pine forest on sandy rises and now much reduced through the inroads of agriculture (Dimboola & Nhili districts, near Boinka, 8 miles west of Nowingi, Kulkyn Nat. Forest); N.S.W., Qd, S.A., Cent. Aust.

—Flowers relatively few (usually <20), clustered (the axis short or obsolete); leaves often somewhat flattened; fruit 1.5-2 × 0.5-1 cm.; seed-wing dark 12

12. Leaves almost *terete*, sometimes slightly flattened or even trigonous, widely spreading, yellowish; flowers numerous, on pedicels <2 mm. long; axis of inflorescence densely pubescent; fruit 7-15 mm. wide, beaked (desert shrub, flowering June-Oct.):

*H. muellerana* J. M. Black *Flor. S. Aust.* ed 2: 267, fig. 321 (1948).

*H. flexilis* F. Muell. ex Benth. *Flor. aust.* 5: 530 (1870), non R. Br. (1810).

*Illust.*: Black (*l.c.*); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 66, col. (1964).

*Vern.*: Desert Hakea (*Flexile* Hakea). *Distr.*: Widespread and locally frequent in stunted mallee scrub on sand-hills of north-western Victoria (Bannerton area, Hattah Lakes Nat. Park, Ouyen district, Cowangie & Murrayville, Wyperfeld Nat. Park, Big & Little Deserts), with an isolated southern occurrence at Mt. Clay near Portland; N.S.W. (far south-west), S.A. (as far west as Kangaroo Id).

—Leaves *terete* to quite flat (sometimes on the same plant), ascending to ± *erect*, dingy green; flowers on slender pedicels 4-5 mm. long; axis of inflorescence only slightly pubescent; fruit ± 5 mm. wide, blunt, but with dorsal mucro near tip of each valve (highland to subalpine shrub, flowering Nov.-Dec.):

*H. microcarpa* R. Br. in *Trans. Linn. Soc. Lond.* 10: 182 (1810).

*Illust.*: Hart in *Edwards' bot. Reg.* 6: t. 475, col. (1820); Cooke in *Loddiges, Bot. Cab.* 3: t. 219, col. (1818); Mass, *Flowers aust. Alps* 43 (1967), as "*H. microphylla*"; Burbidge, *Flor. Adst. Cap. Terr.* fig. 123 (1970).

*Vern.*: Small-fruit Hakea. *Distr.*: Scattered along streams through montane shrubs and around subalpine bogs of east Victorian highlands where locally plentiful (e.g. Strathbogie & Myrrhee, King R., Snowy & Bennison High Plains, Cobungra, Benambra Ck, Limestone Ck, Shelley, Davey's Plain, Mt. Stradbroke & Wulgulmerang, Snowy R., Deddick R., Bonang & Bendoc, Upper Delegate & Genoa Rivers), with a few rare and isolated occurrences on wet tussock grassland in the west (Happy Valley Ck near Linton, near Mt. Elephant, Mt. Clay near Portland); Tas., N.S.W., A.C.T., Qd (near Wallangarra).

#### ORITES R. Br. (1810)

*O. lancifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 108 (1855).

*Illust.*: Reeves in *Garnet, Vict. Nat.* 76: 136 (1959), also *Wild Life* (Melb.) 3: 280 (1941); Stewart, *Vict. Nat.* 56: t. 15 opp. 182 (1940); Schoenfeld in Ewart, *Plants indig. Vict.* t. 72 opp. 9 (1910); Mueller, *Key Syst. Plants* 2: fig. 69 (1886); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 510, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 127 (1970).

*Vern.*: Alpine Orites. *Distr.*: Widespread and locally frequent among rocks in subalpine woodland and alpine heaths of the eastern highlands above 4000 ft. alt. (Lake Mt. & Baw Baws, Mt. Wellington, Barkly Ranges, The Bluff-Mt.

Lovick area, Mts. Buller & Stirling, Barry Mts., Mt. Buffalo, Mts. Hotham and Feathertop, Bogong High Plains, Nunniong Plateau, Mt. Ellery); also N.S.W. (Kosciusko region), A.C.T.

*Diagn.*: Spreading bushy alpine shrub 3-6 ft. high, with rigid leafy glabrous branches; leaves ascending 1.5-3 cm. long, 0.5-1 cm. wide, oblong-elliptic to  $\pm$  lanceolate, entire, rather thick, rigidly coriaceous, glabrous, shining on upper surfaces, dull and coarsely reticulate beneath with thickened margins, subacute at apex, the petioles 2-5 mm. long; flowers creamy-white, in numerous erect terminal spikes 2-5 cm. long, the axis beset with short rusty hairs and bearing at base a few broad pubescent overlapping and deciduous bracts; perianth straight, glabrous, 5-8 mm. long, the 4 ligulate lobes separating to base and spreading widely at anthesis; anthers  $\pm$  0.8 mm. long, on short thick filaments at base of the concave elliptic laminæ ( $\pm$  1.5 mm.); style straight, 5-7 mm. long, glabrous, with minute linear stigmatic tip; fruit a 2-seeded, thickly coriaceous follicle  $\pm$  2 cm. long, broadly fusiform, pointed, at first finely silky-hairy; seed smooth,  $\pm$  5 mm. long, with pale broad oblique terminal wing as long as fruit.

### TELOPEA R. Br. (1810)

*T. oreades* F. Muell. *Fragm. Phyt. Aust.* 2: 170 (1861).

*Illust.*: Harrison, *Know Your Trees and Shrubs* t. 540, col. (1965); Chittenden, *Dict. Gardening* 4: 2088 (1951); Fitch in *Curtis's bot. Mag.* 142: t. 8684, col. (1916); Rossiter in Ewart, *Handb. For. Trees* t. 31 (1925); Schoenfeld in Ewart, *Plants indig. Vict.* t. 73 opp. 10 (1910); Reeves in *Vict. Year Book* 76: t. inter 18 & 19 (1962), also *Wild Life* (Melb.) 1: 22 (Nov.-Dec. 1938) and 7: 369 (1945); Spurway in Willis, *Aust. Plants* 1: 9 (Dec. 1959); Flockton in Maiden, *For. Flor. N.S.W.* 5: t. 163 (1911); Mueller, *Key Syst. Vict. Plants* 2: fig. 72 (1886); Elliott in Wilkin, *N.Z. J. Agric.* 100: 507 (1960); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 472, col. (1968); Rosser, *Wildflowers Vict.* 37, col. (1968).

*Vern.*: Gippsland Waratah. *Distr.*: Restricted in Victoria to damp forests of East Gippsland, ascending to 4000 ft. alt. on Mt. Ellery, but only frequent in a few small areas (Bell Bird & Cabbage Tree Cks, near Orbost, Murrungowar, heads of Delegate & Errinundra Rivers on Goonmirk Range, Bonang-Bendoc forests, Upper Cann R. & Mt. Kaye, Lind & Alfred Nat. Parks); also N.S.W. (as far north as Moss Vale).

*Diagn.*: Small slender glabrous tree to 30 (rarely 50) ft. high; leaves spreading, entire, oblanceolate, broadly acute, paler beneath and  $\pm$  reticulate, 4-8" long (the petioles to 1"), 1-2" wide in upper third. Inflorescence a large terminal very condensed raceme (or head) of 30-50 crimson flowers, subtended at base by  $\pm$  10 caducous lanceolate to linear red bracts 1-1.5" long; perianth irregular,  $\pm$  2 cm. long and 5 mm. wide (on a slender stipe of 1-2 cm.), inarched and recurved under limb, splitting along outer edge to release the style; anthers  $\pm$  2 mm. long, sessile at base of the 4 broad incurved laminæ; style inarched, glabrous, 2-3 cm. long, terminating in a swollen lateral stigma (3 mm. long); hypogynous gland conspicuous, very oblique, almost encircling contracted base of ovary; fruit a large recurved leathery follicle, its body 2-3" long, crowned by the persistent accrescent style ( $\pm$  1.5"); seeds 10-16 imbricate in two rows,  $\pm$  7  $\times$  4 mm., smooth, grey, with narrowly oblong terminal wing  $\pm$  20 mm. long.

LOMATIA R. Br. (1810)

1. Perianth *densely pubescent*; leaves *pubescent* on under-surfaces, narrowly elliptic, up to 6" long, usually  $\pm 1$ " wide, acuminate, usually sharply and distantly toothed, rarely deeply lobed (small tree of gullies in mountain-forest):

*L. fraseri* R. Br. *Suppl. prim. Prodr. Flor. Nov. Holl.* 34 (1830).

*Illustr.*: Ewart, *Handb. For. Trees* t. 34 (1925); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 408, col. (1968).

*Vern.*: Tree *Lomatia*. *Distr.*: Widespread, but only occasional, throughout moister forests of the eastern highlands, ascending to gully-heads at almost 5000 ft. alt. (e.g. Kinglake, Dandenongs, Upper Yarra & Bunyip R. Ranges, Baw Baws, Strzelecki Ranges, Wilson Prom., Upper Jamieson R., Mt. Buffalo Nat. Park, Mts. Buller & Cobbler, Barry Mts., Harrietville & Mt. St. Bernard, Bogongs, Nunniong Plateau, W Tree, Bonang & Bendoc, Goonmirk Range, Mt. Tingaringy, Mt. Ellery, Brodribb & Bemm Rivers), with isolated western occurrences in the S. Otway Ranges; also N.S.W.

—Perianth *glabrous* or almost so; adult leaves *glabrous* 2

2. Leaves rather *shiny*, *ovate to oblong or broadly lanceolate*, 1-4" long, with very *conspicuous reticulate venation* on upper-surfaces, the margins *coarsely and pungently toothed* (shrub 1-6 ft. high, rarely more):

*L. ilicifolia* R. Br. in *Trans. Linn. Soc. Lond.* 10: 200 (1810).

*Illustr.*: Fitch in *Curtis's bot. Mag.* 69: t. 4023, col. (1843); Galbraith, *Wildflowers Vict.* ed. 3; t. 30 (1967); Adam in Ewart, *Handb. For. Trees* t. 33 (1925); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 33, col. (1968).

*Vern.*: Holly *Lomatia*. *Distr.*: Widespread and locally frequent in hilly forest land south of the Divide, between Mt. Disappointment and the Cape Howe Ranges (e.g. Kinglake, Dandenongs, Emerald & Gembrook, Arthur's Seat, Yallourn & Traralgon, Mirboo North, Wilson Prom., Valencia Ck, Toongabbie, Bruthen-Buchan districts, W Tree, Wulgulmerang, Orbost, near Mt. Ellery, Mt. Kaye, Mt. Drummer, Wingan Inlet, Mallacoota, Gabo Id, Upper Genoa R.), much less common in the north-east (Marysville, Mt. Buffalo, Bogong) and with isolated occurrences in the west (Brisbane & Otway Ranges); N.S.W., Qd.

—Leaves *dull*, *linear*, 3-8" long, usually <1 cm. wide, the *venation inconspicuous* and margins with relatively *few distant teeth* or almost entire (tall, usually riparian shrub or small tree 10-15 ft. high):

*L. myricoides* (J. Gærtner.) Domin. in *Bibl. bot., Stuttgart* 22 (Heft 89): 42 (1921).

*Embothrium myricoides* J. Gærtner. *Fruct. & Semin. Plant.* 3: 215, t. 218 (1805);

*L. longifolia* R. Br. *Prodr. Flor. Nov. Holl.* 390 (1810).

*Illustr.*: Gærtner (l.c.); Fitch in *Curtis's bot. Mag.* 126: t. 7698, col. (1900); Ewart, *Handb. For. Trees* t. 32 (1925); Hart in *Edwards' bot. Reg.* 6: t. 442, col.

(1820); Mass, *Flowers aust. Alps* 37 (1967)—all except Gærtner as "*L. longifolia*"; Burbidge, *Flor. Aust. Cap. Terr.* fig. 126 (1970).

**Vern.:** River Lomatia (Long-leaf Lomatia). **Distr.:** Ranging widely and locally abundant along streams throughout the eastern highlands, ascending to about 3000 ft. alt. (e.g. Upper Yarra, Tyers, Thomson, Rubicon, Jamieson, Howqua, Delatite, King, Ovens, Buffalo, Kiewa & Mitta Mitta Rivers, Bogong, Shelley, Pine Mt., Mt. Pinnibar, Limestone Ck, Wulgulmerang, Suggan Buggan, Reedy R. & Snowy R. Gorges, Foster, Mitchell R. gorges, Brodribb R., St. Patrick's R., Cann R., Lind Nat. Park, Wingan Inlet, Upper Genoa R.); N.S.W., A.C.T.

### BANKSIA L. f. (1781)

1. Perianth *bright golden*; style *purplish-black* (rarely golden), remaining *permanently hooked*; cones cylindrical, 3-8" long; leaves narrow-linear, 2-4" long, 2-7 mm. wide, with spinulose-denticulate (rarely entire) and often revolute margins; shrub to 10 ft. high:

**B. spinulosa** Sm. *Specim. Bot. New Holl. I:* 13, t. 4 col. (1793).

*B. collina* R. Br. in *Trans. Linn. Soc. Lond.* 10: 204 (1810).

**Illust.:** Sowerby in Smith (l.c.); Harrison, *Know Your Trees and Shrubs* tt. 55 & 65, col. (1965); Flockton in Maiden, *For. Flor. N.S.W.* 4: t. 147 (1910); Galbraith, *Wildflowers Vict.* t. 28 (1967); Willis, *Aust. Encycl.* 1: 422 (1958); Beuhne, *Honey Flor. Vict.* ed. 5: 95 fig. 63 (1949); Reeves, *Vict. Nat.* 55: t. 5 (1938), also *Wild Life* (Melb.) 5: 268 (1943); Goss, *Wild Life* (Melb.) 6: 272 (1944)—all, except Smith, Harrison t. 65, and Maiden, as "*B. collina*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 387, col. (1968).

**Vern.:** Hairpin Banksia (Golden Candlesticks—Qd). **Distr.:** Widespread and often frequent in stringybark-peppermint forests of eastern Victoria on and south of the Divide (e.g. Kinglake & Dandenong Ranges, Cockatoo, Tonimbuk, Powelltown, Walhalla, Bass R. valley, Strzelecki Ranges, Foster, Wilson Prom., Mt. Kaye, Cann R., Wingan Inlet, Howe Ranges), with a very isolated far western occurrence at Mt. Clay near Portland; N.S.W., Qd.

—Perianth *creamy-yellow to brownish*; style *straw-coloured*, *straightening out* at anthesis; cones shortly cylindric, ovoid or  $\pm$  globose 2

2. Leaves *normally entire* or almost so (but seedling and juvenile foliage often toothed), their under-surfaces  $\pm$  obscured by a conspicuous *whitish indumentum*; spikes  $\pm$  2" wide (seldom more) 4

Leaves all *strongly and regularly serrate*, with numerous, bold, regular *transverse veins on the greenish under-surfaces*; spikes 2-5" wide 3

3. Leaf widest *below apex*, 4-8" long (rarely less); spikes 3-6" long, *ovoid to cylindric*; branchlets and perianth with a close *appressed indumentum of pale  $\pm$  velvety hairs* (near-coastal, eastern tree 10-40 ft. high):

**B. serrata** L. f. *Suppl. Plant.* 126 (1781).

**Illust.:** Ross-Craig in *Curtis's bot. Mag.* 163: t. 9642, col. (1942); Maiden, *Flowering Plants & Ferns N.S.W.* pt. 3: t. 10, col. (1895); Flockton in Maiden, *For. Flor. N.S.W.* 4: t. inter 16 & 17, t. 119 (1908); Rossiter in Ewart, *Handb. For. Trees* t. 35 (1925); Beuhne, *Honey Flor. Vict.* ed. 5: 93 fig. 61 (1949); Leithhead, *Wild*

*Life* (Melb.) 16: 459 (1952); Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 8 (1913); Parkinson in Rienits, *Voyages Captain Cook* 69, col. (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 21, col. (1968).

*Vern.*: Saw *Banksia* (Red Honeysuckle). *Distr.*: Conspicuous and often abundant on sandy ground in more open forests of the coastal and near-coastal tracts of Gippsland, between Waratah Bay and the N.S.W. border (Wilson Prom., Sunday Id, Strzelecki Ranges, Perry R., Maffra district, Sperm Whale Head, Lakes Entrance & Nowa Nowa, Canni Ck near Bruthen, Mt. Kaye, Wingan Inlet, Mallacoota); Tas. (where extremely localized, at Sisters Creek on N.W. coast), N.S.W.

—Leaf widest at apex, very truncate, up to 3" (rarely 4") long; spikes 2-4" long, often  $\pm$  globose; branchlets and perianth with loose shaggy hairs which are rusty-brownish when dried (desert shrub to about 6 ft. high):

*B. ornata* F. Muell. ex Meissn. in *Linnæa* 26: 352 (1854).

*Illust.*: Harrison, *Know Your Trees and Shrubs* t. 54, col. (1965); Reeves in Garnet, *Veg. Wyperfeld Nat. Park* 25 (1965); Reeves in Swaby, *Victoria's Resources* 63: 53 (1964); Black, *Flor. S. Aust.* ed. 2: fig. 324 (1948); Beuhne, *Honey Flor. Vict.* ed. 5: 94 fig. 62 (1949), also *J. Dep. Agric. Vict.* 15: 39 (1917); Brown, *For. Flor. S. Aust. Pt. 1*, col. (1883).

*Vern.*: Desert *Banksia*. *Distr.*: Frequent and often dominant on Mallee sand-hills in far western Victoria (Wyperfeld Nat. Park, Big & Little Deserts, but not in the Far N.W.), extending to sandy heaths adjoining the Black & Victoria Ranges and northern fringe of Grampians (Mt. Zero); also S.A. (as far west as Marble Range on Eyre Penins.).

4. Leaves manifestly truncate (or even indented) at apices, usually <8 mm. wide, the white under-surface with conspicuous reticulate venation; withered perianths and styles indefinitely persistent on fruiting cones; body of seed broadly cuneate,  $\pm$  7 mm. long, the wing extending to 14 mm. (very widespread shrub, sometimes a small tree to 20 ft.):

*B. marginata* Cav. in *An. Hist. nat., Madrid* 1: 227 (1800).

*Illust.*: Curtis's bot. Mag. 45: t. 1947, col. (1817); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 13, col. (1960); Ewart, *Flor. Vict.* 399 fig. 172 (1931); Schoenfeld in Ewart, *Plants indig. Vict.* t. 75 opp. 12 (1910), as "*B. australis*"; Ewart, *Handb. For. Trees* t. 37 (1925); Beuhne, *Honey Flor. Vict.* ed. 5: 92 fig. 60 (1949); Flockton in Maiden, *For. Flor. N.S.W.* 4: t. 135 (1909); Scott, *Wild Life* (Melb.) 1: 17 (Oct. 1939); Bishop, *ibid.* 6: 273 (1944); Muelier, *Plants indig. Colon. Vict.* fig. 73 (1864-65); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 229, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 128 (1970).

*Vern.*: Silver *Banksia* (Honeysuckle, Warrock—aborig.). *Distr.*: Excepting the Far North-west, northern plains, and wetter mountain-forests, a very widely ranging species in Victoria, from sea-level to the subalps on a great variety of soils (e.g. in such dispersed regions as the Big & Little Deserts, Grampians, Lower Glenelg R., Mt. Eccles, Mt. Cole, Creswick, Otway & Brisbane, Ranges, Graytown, Dandenongs, Mornington Penins., Wilson Prom., Howqua R., Wangaratta, Buffalo R., Mitta Mitta R., Pine Mt., Tom Groggin, Bendoc, Bairnsdale, Gabo Id); S.A., Tas., N.S.W., A.C.T.

—Leaves  $\pm$  *acute* at apices, never truncate; withered perianths and styles soon *deciduous*, always absent from ripe cones; maturing capsules densely *whitish-tomentose* 5

5. Leaves  $< 8$  mm. wide, always *pungent-pointed* (sometimes with a few spiny teeth on margins also), the midrib often bearing scattered ferruginous hairs; body of seed  $\pm$  semicircular,  $\pm 7$  mm. long, the wing extending to 16 mm. (flat-crowned bush of rocky places in eastern highlands, at 3000-4500 ft.):

**B. canei** J. H. Willis in *Muelleria* 1: 118 (1967).

*Vern.*: Mountain Banksia. *Distr.*: Scattered, but locally abundant, in a few exposed rocky situations of the E. Victorian highlands between 2800 ft. & 4500 ft. alt. (Upper Wellington R., Brumby Point on Nunniong Plateau, Wulgulmerang district, Upper Mitta Mitta R.); also south-east N.S.W. (Kybean section of Dividing Range).

[A collection from Mt. Fulton, Port Davey in far S.W. Tasmania (Mar. 1954), has comparable, almost pungently pointed leaves; but the cones are invested with withered perianths (without capsules) and its affinities are at present uncertain.]

—Leaves  $> 8$  mm. wide (sometimes to 20 mm.), *broadly acute*, never pungent, the midrib *glabrous*; body of seed  $\pm$  crescentic, 10 mm. long, the narrowly cuneate wing extending to 18 mm. (usually a massive coastal tree, but also in Grampians):

**B. integrifolia** L. f. *Suppl. Plant.* 127 (1781).

*Illust.*: Hooker in *Curtis's bot. Mag.* 54: t. 2770, col. (1827); Harrison, *Know Your Trees and Shrubs* t. 60, col. (1965); Stones in Galbraith, *Wildflowers Vict.* frontisp., col. (1967); Rossiter in Ewart, *Handb. For. Trees* t. 36 (1925); Beuhne, *Honey Flor. Vict.* ed. 5: 91 fig. 59 (1949); Bishop, *Wild Life* (Melb.) 6: 273 (1944).

*Vern.*: Coast Banksia. *Distr.*: Except for isolated occurrences along Lower Glenelg R. and on high sandstone bluffs of the Grampians (Victoria Range, Mt. Rosea, Mt. William & Major Mitchell Plateau), strictly confined to the coastline east from Queenscliff but not continuous (Brighton to Frankston, Mornington Penins., Phillip Id, Waratah Bay, Corner Inlet & Wilson Prom., Spermin Whale Head, Lakes Entrance, Wangan Inlet, Howe Ranges, Gabo Id); N.S.W., Qd.

### Family SANTALACEÆ

Leaves *opposite*, *flat*, *persistent*, 1-2" long; flowers *paniculate*, with inferior ovary; fruit 1-3 cm. wide, drupaceous, red, with *deeply pitted endocarp* (or "stone") 1-2 cm. in diameter (small trees of west and north-west) *Santalum* (p. 64)

Leaves *alternate* (but often absent) or, if ever *opposite* (very rarely) then drupe  $< 1$  cm. wide; flowers in short spikes or clusters, or solitary in axils; endocarp *not pitted* 2

2. Ovary *superior* (perianth divided to the base beneath it); fruit supported on an *enlarged, fleshy and usually coloured pedicel*  
*Exocarpos* (p. 59)  
 Ovary *inferior*; pedicel of fruit *never* becoming enlarged and fleshy 3
3. Flowers *single* in axils of persistent, narrow-linear leaves; perianth with *prominent tube*; nut *vertically ribbed* (rare, pale semi-shrub  $\pm$  1 ft.)  
*Thesium* (p. 65)  
 Flowers *not single* or, if so, then leaves either absent or minute and scale-like; perianth *divided to the ovary* or almost so; fruit a *drupe*, without ribs (shrubs or trees) 4
4. Leaves *flat, persistent, opposite*, 1-2" long; flowers few in short axillary racemes or cymes; drupe *blue* (very rare slender East Gippsland shrub)  
*Santalum* (p. 64)  
 Leaves *alternate* and minute, *absent at flowering time*; drupe *never blue* (rigid shrubs with stiff *broom-like, usually erect branches*) 5
5. Flowers rather *numerous, in distinct spikes* to 2 cm. long, bisexual, each with 1 subtending bract which is *deciduous* before anthesis; drupe *very succulent*  
*Leptomeria* (p. 63)  
 Flowers borne either *singly along dull branchlets* or *few together* in small clusters, *bisexual*, each subtended by 2 to several *persistent bracts*; drupe to 5 mm. long, *not* or only slightly succulent  
*Choretrum* (p. 62)  
 As for the last, but branchlets  $\pm$  *resinous-lustrous*, flowers *unisexual* and the succulent drupe often 5-10 mm. long (uncommon East Gippsland shrub)  
*Omphacomeria* (p. 63)

## EXOCARPOS Labill. (1799)

1. Dwarf, *prostrate alpine shrublet*; flowers 1-3 *together* in the axils of *opposite and decussate* scale-like leaves; fruiting pedicel red:
- E. nanus* Hook. f. in Hook. *Lond. J. Bot.* 6: 281 (1847).  
*Illustr.*: Stauffer, *Mitt. bot. Mus. Univ. Zürich* 213: t. 13 (1959); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 526, col. (1968).  
*Vern.*: Alpine Ballart. *Distr.*: Widespread through alpine and subalpine tracts of the eastern highlands in moss-beds fringing raised bogs and on open heath, usually at >4000 ft. alt., but rather uncommon and localized (Baw Baws, Bennison High Plains, Mts. Buller & Buffalo, Dargo & Bogong High Plains, Davey's Plain, Cobboras, Wulgulmerang where descending to  $\pm$  3000 ft. alt.); Tas., N.S.W. (Kosciusko region), A.C.T.
- Erect, *never alpine*; flowers several per cluster or spike; scale-leaves *alternate* 2
2. Branchlets thick, *rigid, terete* or  $\pm$  polygonal in section, sometimes spinescent; flower-spikes ovoid, *never* elongated (plants of Mallee or coast only) 5
  - Branchlets *flexible*, usually weak,  $\pm$  *flattened or acutely angled* in section 3



3. Flowers in small, *sessile axillary clusters*; succulent fruiting pedicel *whitish or lilac*, wider than long (branchlets light green, triangular in section and  $\pm$  *flattened*):

*E. strictus* R. Br. *Prodr. Flor. Nov. Holl.* 357 (1810).

*Illustr.*: Stauffer, *Mitt. bot. Mus. Univ. Zürich* 213: t. 10 (1959); Coleman, *Vict. Nat.* 51: 135 (1934); Meredith, *Bush Friends Tasm.* t. 2 fig. on left, *col.* (1860).

*Vern.*: Pale-fruit Ballart (Dwarf Cherry). *Distr.*: The most widespread species in Victoria, occurring frequently in forest-land under a diversity of climatic and soil conditions, from riverine Red Gum forests of the Far North-west to calcareous coastal cliffs, fringes of far eastern jungle and in subalps at  $>4000$  ft. alt., often co-extensive with *E. cupressiformis* (e.g. in such dispersed localities as Wyperfeld Nat. Park, Little Desert, Grampians, Lower Glenelg R., Bendigo Whipstick Scrub, Lerderderg Gorge, Kinglake & Dandenongs, Walhalla, Wilson Prom., Eildon, Mts.-Cobbler & Buffalo, Corryong & Cudgewa, Tom Groggin, Cobboras, Suggan Buggan, Mt. Tingaringy, Mt. Kaye, Mt. Drummer, Howe Ranges); S.A. (only Renmark region of Murray R. & Tattiana district near Vic. border), Tas., N.S.W., A.C.T.

—Flowers in *stalked cylindrical spikes* (branchlets often bronzy-coloured, *never flattened*) 4

4. Branches *not* conspicuously striped; leaves reduced to triangular or lanceolate *scales* that are *straight* at apices; flower-spikes 3-6 mm. long; fruiting pedicel *orange to red* (small, often regularly pyramidal tree of wide distribution):

*E. cupressiformis* Labill. *Voy. Rech. La Pérouse* 1: 155, t. 14 (1800).

*Illustr.*: Labillardière (*l.c.*); Reeves in Stauffer, *Mitt. bot. Mus. Univ. Zürich* 213: 45 fig. 14 (1959); Galbraith, *Wildflowers Vict.* tt. 38 & 39 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 330 A-C (1948); Coleman, *Vict. Nat.* 51: 133 (1934); Ewart, *Handb. For. Trees* t. 39 (1925); Stead, *Tree Book* n. 2: 100 (1933); Nodder in Banks & Solander, *Ill. aust. Plant. Cook's Voy.* 3: t. 280 (1905); Meredith, *Bush Friends Tasm.* t. 2 fig. on right, *col.* (1860); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 206, *col.* (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 129 (1970).

*Vern.*: Cherry Ballart (Native or Wild Cherry, Ballee & Ballot—Vict. aborig.). *Distr.*: Widespread and often frequent in various forests throughout Victoria, excepting the N.W. Mallee and subalps (e.g. in localities as representative as Little Desert, Black & Dundas Ranges, Coleraine, Portland, Mt. Eccles, Stony Rises near Pomboineit, Mt. Cole, Creswick, St. Arnaud, Wedderburn, Terricks, Bendigo, Mt. Ida, Rushworth, Otways, Brisbane Range, Mornington Penins., Melbourne, Powelltown, Cathedral Range, Strathbogie Ranges, Warby Range, Chiltern, Mt. Buffalo, Mt. Granya, Pine Mt., Phillip Id, Foster, Maffra, Bairnsdale, Lakes Entrance, Mt. Kaye, Lind Nat. Park, Upper Genoa R., Mallacoota); S.A. (as far west as Eyre Penins.), Tas., N.S.W., A.C.T., Qd, the record for W.A. being very dubious.

—Branches manifestly and *longitudinally striped* (the bronzy ribs alternating with pink or whitish grooves); leaves *linear-subulate* (but caducous), 1.5-7 mm. long or more, always *recurved at apex*; flower-spikes

4-8 mm. long; fruiting pedicel *whitish to purple*, rarely reddish (slender broom-like, often gracefully pendulous shrub of Mallee sand-hills):

*E. sparteus* R. Br. *Prodr. Flor. Nov. Holl.* 356 (1810).

*Illust.*: Garnet, *Veg. Wyperfeld Nat. Park* 40 fig. 5 n. 101 (1965); Eichler in Stauffer, *Mitt. bot. Mus. Univ. Zürich* 213: 46-47 figs. 15 & 16 (1959); Rossiter in Ewart, *Handb. For. Trees* t. 40 (1925); Schoenfeld in Ewart, *Plant. indig. Vict.* t. 88 opp. 25 (1910); Mueller, *Key Syst. Vict. Plant.* 2: fig. 65 (1886), also *Introd. bot. Teachings Schools Vict.* 41 (1877); Warburg, *Pflanzenwelt* 1: 506 (1913).

*Vern.*: Broom Ballart (Nyora—Vict. aborig.). *Distr.*: Rather frequent and conspicuous on sandy rises in mallee scrub of N.W. Victoria between the Little Desert and Kulkyne National Park (e.g. Big Desert north of Serviceton, Kaniva & Nhill, Katyil district, Wyperfeld Nat. Park, Ouyen); N.S.W., Qd, S.A., Cent. Aust., W.A.

[An interesting natural hybrid between *E. sparteus* and *E. strictus* was collected "N.W. of Lake Albacutya" in Sept. 1887—see remarks by H. U. Stauffer in *Mitt. bot. Mus. Univ. Zürich* 213: 181-83 (1959).]

5. Fruit *pyramidal*,  $\pm$  *costate*, *pubescent* when young, its *red* fleshy pedicel *wider* than long (divaricate bush or small tree of N.W. Mallee):

*E. aphyllus* R. Br. *Prodr. Flor. Nov. Holl.* 357 (1810).

*Illust.*: H. B. in Brown, *For. Flor. S. Aust.* pt. 8: t. col. opp. 39 (1888); Engler & Drude, *Veg. Erde* 7: 282 (1906); Tschirch, *Linnaea* neu. ser. 9: t. 2 fig. 17 (1880), as "*E. leptomerioides*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 135, col. (1968).

*Vern.*: Leafless Ballart (Stiff or Jointed Cherry—N.S.W., Currant Bush—Qd, Wining—Vict. aborig., Darrul—W.A. aborig.). *Distr.*: Restricted in Victoria to flatter sandy, loamy and calcareous tracts of the more northern Mallee, where only occasional (e.g. Boundary Point, Lindsay Point, Berribee Tank, Mildura & Red Cliffs districts and Kulkyne Nat. Forest in Far North-west, also Annuello and Swan Hill areas). records for the Little Desert being dubious; N.S.W., Qd, S.A., W.A.

—Fruit broadly *ellipsoid*, *smooth*, *glabrous*, its *white to rosy lilac* fleshy pedicel *no wider* than long (rigidly erect, uncommon coastal shrub):

*E. syrticola* (F. Muell. ex Miq.) H. U. Stauffer in *Mitt. bot. Mus. Univ. Zürich* 213: 173 (1959).

*E. strictus* R. Br. var. *syrticola* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 104 (1856).

*Illust.*: Stauffer, *l.c.* tt. 9 & 23 B (1959); Black, *Flor. S. Aust.* ed. 2: fig. 686 on 523 (1952), as "*E. aphyllus*"; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 293, col. (1968).

*Vern.*: Coast Ballart. *Distr.*: Scattered along the coast, on sand-dunes, colianite and granitic cliffs, from Wilson Prom. (TYPE loc.) to the South Australian border (Cape Otway, mouths of Gellibrand & Curdie's Rivers, Port Fairy, Cape Nelson & Bridgewater Bay, Lower Glenelg R.); also Tas. (Flinders Id), S.A. (as far west as Port Lincoln).

## CHORETRUM R. Br. (1810)

1. Branchlets *angular*; flowers *few together*, clustered on a short common peduncle, forming loose racemes 1-2" long, white or yellow; floral bracts 3:

**C. glomeratum** R. Br. *Prodr. Flor. Nov. Holl.* 354 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 954 on p. 529 (1952); Schoenfeld in Ewart, *Plant. indig. Vict.* t. 81 opp. 18 (1910), as "*C. chrysanthum*"; Mueller, *Key Syst. Vict. Plant.* 2: fig. 64 (1886), as "*C. chrysanthum*"; Bauer in Endlicher *Icon. Gen. Plant.* t. 45 (1838).

*Vern.*: Common Sour-bush (Berry Broombush—S.A.). *Distr.*: Confined in Victoria to mallee scrub of far western areas where scattered and uncommon (Little Desert, Lawloit, Big Desert north of Serviceton), with more easterly isolated records for the Whipstick Scrub near Bendigo, Avoca R. and Heathcote district; N.S.W., Qd, S.A., W.A.

[Victorian material is largely referable to var. *chrysanthum* (F. Muell., *ut sp.*) Benth. *Flor. aust.* 6: 218 (1873), differing only in its *yellow flowers* from the typical form which is restricted to western parts of the Little Desert in Victoria and is quite rare.]

—Branchlets *terete*; flowers *solitary* within each cluster of broad ciliate bracts 2

2. Branchlets *dull greenish, numerous, short*, about 1 mm. thick; flowers forming *terminal spikes* usually about 1" long, *scattered*, each subtended by about 5 bracts (widespread shrub):

**C. pauciflorum** A. DC. in *DC. Prodr.* 14: 676 (1857).

*C. lateriflorum* sens. Benth. *Flor. aust.* 6: 219 (1873) pro maj. parte, atque auctt. plur., *non* R. Br. (1810).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 130 (1970).

*Vern.*: Dwarf Sour-bush. *Distr.*: Occasional on heaths in Emerald-Upper Beaconsfield, Tonimbuk & Tynong districts and between Lower Latrobe R. & Merri-man's Ck, extending to highland forests of Gippsland (Walhalla & Upper Thomson R., Orbost, Nunniong Plateau & Mt. Seldom Seen at 4000 ft. alt., Wulgulmerang & Mt. Stradbroke, Amboyne Ck near Tubbut) and far N.E. Victoria (Bogong, Cobungra, Omeo, Mitta Mitta, Gibbo Ranges, Pine Mountain) where locally rather frequent on stony slopes; N.S.W., A.C.T., Qd.

—Branchlets *bronzy or yellowish, elongated* (2-12"),  $\pm$  1.5 mm. thick (when flowering); flowers *close together* along elongated spikes of the *previous season's growth*, each with an involucre of 8-10 bracts (rare shrub of the far west):

**C. spicatum** F. Muell. *Fragm. Phyt. Aust.* 1: 21 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 330 D-E (1948).

*Vern.*: Spiked Sour-bush. *Distr.*: Scattered on sandy ground through mallee scrub in far western Victoria and now very rare (Dimboola, Kiata, Little

Desert, Wyperfeld Nat. Park), an early record for Wando Vale near Casterton being uncertain; N.S.W., S.A. (as far west as Kangaroo Id).

### LEPTOMERIA R. Br. (1810)

Branchlets *weak, prominently angled*,  $\pm 1$  mm. thick; flower-spikes 1-2 cm. long, or even more (erect, far eastern shrub):

**L. acida** R. Br. *Prodr. Flor. Nov. Holl.* 353 (1810).

*Illust.*: Sulman, *Aust. Wild Flowers* ser. 2: t. 9 (1913); Lindley, *Veg. Kingd.* 787 (1846); Endlicher, *Icon. Gen. Plant.* t. 74 (1838).

*Vern.*: Sour Currant-bush. *Distr.*: Occasional on sandy ridges in poor scrubby forest of far East Gippsland (Wingan R., Genoa Peak, Wangrabbell, Upper Genoa R.); N.S.W., Qd.

Branchlets *rigid, terete* or almost so, often  $\pm$  spinescent,  $\pm 2$  mm. thick; flower-spikes  $< 1$  cm. long (divaricate western shrub):

**L. aphylla** R. Br. *Prodr. Flor. Nov. Holl.* 354 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 87, col. (1968).

*Vern.*: Leafless Currant-bush. *Distr.*: Scattered on sandy rises in mallee scrub (Far North-west, Big & Little Deserts, Wyperfeld Nat. Park), northern and western fringes of Grampians, and rocky hills of the western auriferous belt where sometimes locally common (Warracknabeal, Bolangum Range & Morri Morri Forest, St. Arnaud, Bealiba & Dunolly, Wedderburn, Donald, Mt. Korong, Inglewood, Whipstick Scrub near Bendigo); N.S.W., S.A. (as far west as Port Lincoln).

### OMPHACOMERIA (Endl.) A. DC. (1857)

**O. acerba** (R. Br.) A. DC. in *DC. Prodr.* 14: 681 (1857).

*Leptomeria acerba* R. Br. *Prodr. Flor. Nov. Holl.* 354 (1810).

*Illust.*: Stauffer, *Mitt. bot. Mus. Univ. Zürich* 213: t. 21 (1959); Fitch in *Hook. Icon. Plant.* 12: t. 1172 (1873); Burbidge, *Flor. Aust. Cap. Terr.* fig. 131 (1970).

*Vern.*: Leafless Sour-bush. *Distr.*: Occasional in montane forests of north-eastern and farther eastern Victoria, between the Dargo R. and N.S.W. border country, but descending almost to sea-level at Wingan Inlet Nat. Park (Cobungra, Omeo, Mitta Mitta, Cravensville, Pine Mt., Gibbo Range, Nunniong Plateau, Wulgulmerang & Suggan Buggan, Bonang, Upper Genoa R.); also N.S.W. (as far north as Hunter R.), A.C.T.

*Diagn.*: Rigid, wiry, upright or divaricate, much branched, leafless, dioecious shrub of broom-like aspect, 2-4 ft. high; branchlets terete but striate and deeply grooved, glabrous,  $\pm$  resinous, the ultimate  $\pm 1$  mm. in diam. and internodes between inflorescences 5-20 mm. long; flowers minute, unisexual, resinous, sessile in lateral clusters of 1-7 (the female often solitary), 4-partite (rarely 5-lobed); perianth-segments broadly deltoid, thick, yellowish,  $\pm 1$  mm. long; anthers 0.2-0.4 mm. long on very short broad filaments; ovary inferior,  $\pm 1$  mm. long, slightly wider than perianth, the style extremely short and stigma 2-lobed. Fruit a globular or ovoid, purplish, fleshy and minutely

furfuraceous drupe 6-8 (rarely to 10) mm. long, crowned by the persistent perianth, its endocarp hard bony and 0.6 mm. thick. [The bases of branchlets are sometimes much swollen into fruit-like galls.]

SANTALUM L. (1753)

[incl. *Fusanus* R. Br. (1810), non Marr. (1774)]

1. Leaves *oblong, obtuse*, 1-2" long; flowers *few*, in small shortly pedunculate *axillary racemes or dense cymes*; fruit *blue*, 6-8 mm. wide (very rare, erect, slender shrub of far east):

*S. obtusifolium* R. Br. *Prodr. Flor. Nov. Holl.* 356 (1810).

*Vern.*: Sandalwood. *Distr.*: Extremely localized and rare in Victoria where known from only three collections, viz. amongst granite rocks beside the Genoa R. near Genoa (Mar. & Oct. 1949) and at confluence of Genoa R. with head of Mallacoota Inlet (Mar. 1966); N.S.W., Qd (McPherson Range).

Leaves *lanceolate*, at least the young ones *acuminate*; flowers *numerous* in *much-branched panicles*; fruit 10-30 mm. wide, rarely less (small,  $\pm$  pendulous northern and western trees) 2

2. Leaves *olive-green, never whorled*, mostly 2-3" long, 4-10 wide; flowers  $\pm$  2 mm. long, with *very short* style; fruit 2-3 cm. wide,  $\pm$  succulent, *red, sweetish*, edible, crowned by *persistent* perianth-lobes; endocarp ("stone") hard, *deeply pitted*:

*S. acuminatum* (R. Br.) A. DC. in *DC. Prodr.* 14: 684 (1857).

*Fusanus acuminatus* R. Br. *Prodr. Flor. Nov. Holl.* 355 (1810).

*Illust.*: Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 54, col. (1964); Garnet. *Veg. Wyperfeld Nat. Park* 46 fig. 8 n. 98 (1965); Gardner, *Wildflowers W. Aust.* 37, col. (1959); Willis, *Aust. Encycl.* 7: 317 (1958); Black, *Flor. S. Aust.* ed. 2: fig. 331 (1948), as "*Eucarya acuminata*"; Thol, *Wild Life* (Melb.) 8: 387-88 (1946); Rossiter in Ewart, *Handb. For. Trees* t. 41 (1925); Flockton in Maiden, *For. Flor. N.S.W. I.* t. 16 opp. 97 (1903); Myers in Turner, *Forage Plant. Aust.* t. opp. 91 (1891)—last four (Thol to Turner) as "*Fusanus acuminatus*"; Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 154, col. (1968).

*Vern.*: Sweet Quandong (Native Peach, Katunga & Burn-Burn—S.A. aborig).

*Distr.*: Scattered through the Mallee and more open woodlands of western and northern Victoria, but now uncommon to rare in most former habitats, the southern limit being about 15 miles north of Edenhope and easternmost in Nathalia district of the Goulburn Valley where now extremely rare (Far North-west including Kulkyn Nat. Forest & Timberoo Forest, Wyperfeld Nat. Park, Little Desert, Dimboola, Mt. Arapiles, Warracknabeal, Mt. Korong, Nyah West & Swan Hill, Bealiba, Whipstick Scrub near Bendigo); all mainland States, Cent. Aust.

—Leaves usually *slaty-grey* or silvery, some in *whorls of 3*, 1-2" long, mostly 3 mm. wide or less; flowers 3-4 mm. long, short styled; fruit 2-3 cm. wide, brownish-red, *bitter* and inedible, its perianth *deciduous* long before maturity (leaving an annular scar on fruit); endocarp *slightly pitted*; branches often long-pendulous:

*S. murrayanum* (Mitch.) C. A. Gardner in *Bull. For. Dep. W. Aust.* n. 44: 9 (1929).

*Eucarya murrayana* Mitch. *Three Exped. E. Aust.* 2: 100 (1838);

*Fusanus persicarius* (F. Muell., ut *Santalum* sp., (1855) F. Muell.  
ex Benth. *Flor. aust.* 6: 216 (1873).

*Illust.*: Mitchell (*l.c.*); Reeves in Burke, *Wild Life* (Melb.) 3: 354 (1941).

*Vern.*: Bitter Quandong (Ming). *Distr.*: Diffused through the Victoria Mallee on sand-hills between Mt. Arapiles, Mildura and Sea Lake, but only as isolated occurrences and nowhere common (Little & Big Deserts, Lakes Hindmarsh & Albacutya, Wyperfeld Nat. Park, Cowangie, Kulkyn Nat. Park, Red Cliffs); all mainland States.

—Leaves  $\pm$  *glaucous*, *opposite*, 2-5" long; flowers 5-7 mm. long, in trichotomous panicles, the style *elongated* ( $\pm$  4 mm.); fruit 6-9 mm. wide, *dark-bluish*, sweet and edible, bearing an annular scar from the *caducous* perianth; endocarp *slightly rugose* (extremely rare pendulous tree of Warby Range and Murray R. at Boundary Bend):

*S. lanceolatum* R. Br. *Prodr. Flor. Nov. Holl.* 356 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 330 H-I (1948); Gardner, *Bull. For. Dep. W. Aust.* n. 32: 22, 45 (1923), also n. 44: 4 fig. B (1929); White in Bailey, *Compr. Cat. Qd Plant.* ag. 454-56 (1913); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 223 & 225, col. (1968).

*Vern.*: Northern Sandalwood (Plum Bush—S.A., Native Plum, Bolan—N.Qd aborig.). *Distr.*: One of the rarest indigenous plants in Victoria, consisting of a single old tree on rocky slopes in Brien's Gorge, Warby Range (near Wangaratta), and a second occurrence at Boundary Bend; interior of all mainland States & N. Terr.

### THESIUM L. (1753)

*T. australe* R. Br. *Prodr. Flor. Nov. Holl.* 353 (1810).

*Illust.*: Chatin, *Anat. Veg., Atlas* t. 58 (1856).

*Vern.*: Austral Toad-flax. *Distr.*: Recorded from grasslands and herbfields in scattered parts of Victoria (Wando Vale near Casterton, Lancefield, Delatite R. near Mt. Timbertop, Ovens R., Mitta Mitta & Upper Murray Rivers, near Lake Omeo, Gelantipy district, Lake King), but now very rare and known to survive with certainty only at Gillingal in N.W. of Murrindal West Parish and Wulgulmerang district, East Gippsland; Tas. (reported last century from Upper Derwent R.), N.S.W. (rare and not noted in recent years), Qd, ? Indonesia to China & Japan.

*Diagn.*: Glabrous, yellowish-green perennial herb up to 1 ft. high, probably hemiparasitic on grassland herbs; stems  $\pm$  wiry, slender, sparingly branched; leaves rather lax, alternate, narrow-linear, 1-3 cm. long, 0.5-1.5 mm. wide; flowers greenish, solitary, axillary, sessile between two linear bracteoles that are inserted on subtending leaf-base 2-4 mm. above the axil; perianth narrow, 1.5-2 mm. long, the 5 broad-linear lobes as long as tube; anthers 5, ovoid,  $\pm$  0.2 mm. long on  $\pm$  slender filaments; style  $\pm$  0.8 mm. long, with capitate stigma; ovary inferior; fruit an ovoid or barrel-shaped nut 2-3 mm. long, faintly glaucescent, ribbed with vertical veins and rugose-reticulate between them, crowned by the persistent incurved perianth-lobes.

## Family OLACACEÆ

OLAX L. (1753)

*O. stricta* R. Br. *Prodr. Flor. Nov. Holl.* 358 (1810).*Illust.*: Maiden, *Ill. N.S.W. Plant.* t. 7 (1907); Baillon, *Hist. Plant.* II: 411 fig. 479-481 (1892); Twining, *Ill. nat. Ord. Plant.* 1: 43 (1849).*Vern.*: Olax. *Distr.*: Z—In Victoria confined to far East Gippsland where of very restricted range, but locally rather plentiful, on margins of heathland swamps and in open scrubby forest between Cape Everard, Tamboon Inlet and a point  $\pm$  10 miles south of Cann River; N.S.W., Qd (south-east coast, on edge of lagoons).*Diagn.*: Dense, often rounded, glabrous shrub 3-5 ft. high, with distinct yellowish or bronzy hue, parasitic on roots of other plants; branchlets numerous, erect, furrowed and microscopically papillose; leaves alternate, flat,  $\pm$  distichous, narrow-oblong, 5-15  $\times$  2-4 mm., the apex often abruptly contracted into a mucro and venation obscure; flowers solitary in upper axils, regular, bisexual, on erect pedicels 1-2 mm. long; calyx undivided, cup-shaped, initially an inconspicuous flange only  $\pm$  0.2 mm. high, accrescent after flowering so as to embrace and finally enclose the fruit; petals 5 or 6, valvate, thick, yellowish, linear-oblongate, 4-6 mm. long, free, slightly spreading above but often cohering toward base; functional stamens 3, their flattened glabrous filaments adnate to junctions of petals and joining them in pairs, alternating with several linear staminodia that are bearded below the middle; anthers broad-elliptic,  $\pm$  0.6 mm. long; ovary superior, 1-locular, 3-ovulate; style 1.5-2 mm. long, with capitate obscurely 3-lobed stigma; fruit an obovoid drupe 5-7 mm. long, ensheathed by but free from the enlarged calyx.

## Family LORANTHACEÆ

1. Flowers *minute, unisexual* (small, rare parasites of East Gippsland) 5  
Flowers  $>1$  cm. long, *bisexual* 2
2. Inflorescence a *terminal cyme*; anthers *versatile* (adventitious roots often creeping over branches of host-tree) *Muellerina* (p. 67)  
Inflorescence *axillary*; anthers *basifixed* (no adventitious roots) 3
3. Petals *free* to the base *Amyema* (p. 67)  
Petals *united* at least for the lower one-third 4
4. Leaves *alternate, ovate to lanceolate*; flowers *numerous in racemes*; petals 5, united to above the middle (plant of far East Gippsland) *Dendrophthoe* (p. 69)  
Leaves mostly *opposite, linear*; flowers *solitary or paired*; petals usually 6, united only below the middle (plant of western Victoria) *Lysiana* (p. 69)
5. Stems *terete*; leaves *present*, with *golden indumentum* (parasitic only on other species of mistletoes, viz. *Dendrophthoe vitellina* in Vic.) *Notothixos* (p. 70)  
Stems *broadly flattened* and jointed, *green*; leaves *absent* (parasitic on *Eugenia smithii* in Vic.) *Korthalsella* (p. 69)

## MUELLERINA Van Tiegh. (1895)

Leaves 3-6" long, *linear to lanceolate*, usually 3-nerved; peduncles *labrous*; fruits yellowish (widespread plant with *pendulous* stems, chiefly on eucalypts but also parasitizing *Betula*, *Quercus*, *Schinus*, *Prunus* and other genera of planted trees):

**M. eucalyptoides** (DC.) B. A. Barlow in *Proc. Linn. Soc. N.S.W.* 87: 55 (1962).

*Loranthus eucalyptoides* DC. *Prodr.* 4: 318 (1830);

*L. eucalyptifolius* Sieber ex Schult. & Schult. f. (1829), *non* Humb. et al. (1818);

*Phrygilanthus eucalyptifolius* (Sieb. ex Schult. & Schult. f.) A. W. Eichler in Mart. *Flor. brasil.* 5<sup>2</sup>: 48 (1868).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 365, col. (1968); Blakely, *Proc. Linn. Soc. N.S.W.* 47: t. 29 inter 222 & 223 (1922), as *Phrygilanthus eucalyptoides*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 133 (1970).

*Vern.*: Creeping Mistletoe. *Distr.*: CDEJMNPTVWZ—also S.A., N.S.W., Qd.

Leaves <3" long, *broadly elliptical or oval*, *penniveined*; peduncles minutely *pubescent*; fruits pinkish (plant of coastal East Gippsland, with *spreading* stems, found chiefly on *Banksia*):

**M. celastroides** (Sieber ex Schult. & Schult. f.) Van Tiegh. in *Bull. Soc. bot. Franc.* 42: 25 (1895).

*Loranthus celastroides* Sieber ex Schult. & Schult. f. *Syst. Veg.* 7: 163 (1829);

*Phrygilanthus celastroides* (Sieber ex Schult. & Schult. f.) A. W. Eichler in Mart. *Flor. brasil.* 5<sup>2</sup>: 48 (1868).

*Illust.*: Blakely, *Proc. Linn. Soc. N.S.W.* 47: t. 30 inter 222 & 223 (1922), as *Phrygilanthus celastroides*; Wauer in Ewart, *Weeds . . . Vict.* t. opp. 28, col. (1909), as *Loranthus celastroides*; Mueller, *Key Syst. Vict. Plants* 2: fig. 66 (1886), as *L. celastroides*.

*Vern.*: Coast Mistletoe. *Distr.*: WZ—also N.S.W., Qd.

## AMYEMA Van Tiegh. (1894)

- |   |   |
|---|---|
| 1. Leaves flat  | 3 |
| Leaves terete   | 2 |
| 2. Leaves green, glabrous, 1-3" long, $\pm$ 1 mm. thick; inflorescence glabrous (on various species of <i>Acacia</i> ): |   |

**A. preissii** (Miq.) Van Tiegh. in *Bull. Soc. bot. Franc.* 42: 84 (1895).

*Loranthus preissii* Miq. in Lehm. *Plant. Preiss.* 1: 280 (1845).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 248, col. (1968), as *Lysiana exocarpi*.

*Vern.*: Wire-leaf Mistletoe. *Distr.*: AEJKNP—also all mainland States, Cent. Aust.

—Leaves *hoary*, *minutely tomentose*, 2-8" long, about 1.5 mm. thick; inflorescence *white-tomentose* (exclusively on *Casuarina* spp.):



- A. linophyllum** (Fenzl) Van. Tiegh. in *Bull. Soc. bot. Franc.* 41: 507 (1894).  
*Loranthus linophyllus* Fenzl in Endl. et al. *Enum. Plant.* 56 (1837).  
*Illust.*: Fawcett, *Wild Life (Melb.)* 2: 12-13 (July 1940), as *Loranthus linophyllus*;  
 Leithhead, *ibid.* II: 210 (1949), also 12: 175-76 (1950), both as *L. linophyllus*.  
*Vern.*: Buloke Mistletoe. *Distr.*: ABCDHQR—also W.A., S.A., N.S.W., S.Qd.
3. Inflorescence and usually the obtuse leaves *light greyish*, with *hoary indumentum*, each ray of the former bearing a group of 3 *close flowers*, the central one sessile (exclusively on *Acacia* spp.):
- A. quandang** (Lindl.) Van Tiegh. in *Bull. Soc. bot. Franc.* 41: 507 (1894).  
*Loranthus quandang* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 69 (1838).  
*Illust.*: Coleman, *Vict. Nat.* 66: t. 1 (June 1949); Blakely, *Proc. Linn. Soc. N.S.W.* 49: t. 19 (1924), as *Loranthus quandang*.  
*Vern.*: Grey Mistletoe. *Distr.*: DEHJMNRSWZ—all mainland States, Cent. Aust.
- Inflorescence and foliage *never light grey*; at least the lateral flowers of each group *stalked* 4
4. Flowers <2 cm. long, the central one sessile; leaves *oblanceolate*, *obtuse*, <3" long (chiefly on *Santalaceæ*, but also on *Myoporaceæ*, *Casuarinaceæ* etc.):
- A. miraculosum** (Miq.) Van Tiegh. in *Bull. Soc. bot. Franc.* 42: 84 (1895).  
*Loranthus miraculosus* Miq. in Lehm. *Plant. Preiss.* 1: 281 (1845).  
*Vern.*: Fleshy Mistletoe. *Distr.*: ACFHMR—also W.A., S.A., N.S.W., Qd.
- [The subspecies *boormanii* (Blakely, *ut sp.*) B. A. Barlow in *Aust. J. Bot.* 14: 477 (1966) differs from the typical form of *A. miraculosum* in its longer, relatively narrower leaves (1-4" × 3-10 mm.), longer peduncles, pedicels and buds (the last about 2 cm.). This population occurs on a wide range of hosts (e.g. *Acacia*, *Casuarina*, *Eremophila*, *Myoporum*, *Santalum* and even other *Amyema* species), and has been found in northern Victoria—Rushworth, Lake Hindmarsh & 65 miles west of Mildura—as well as in South Australia, New South Wales and Queensland.]
- Flowers 2 cm. long or more; leaves *lanceolate* (or elongated), often >3" long 5
5. Central flower (in each cyme of 3) *sessile*; stems and common peduncles *dull brownish*, the latter rarely 1" long; leaves often acute (chiefly on *Eucalyptus*, but occasionally on *Acacia* spp.):
- A. pendulum** (Sieber ex Spreng.) Van Tiegh. in *Bull. Soc. bot. Franc.* 41: 507 (1894).  
*Loranthus pendulus* Sieber ex Spreng. *Syst. Veg. Suppl.* (Cur. Post.): 139 (1828).
- Illust.*: Rosser, *Wildflowers Vict.* 89, col. (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 366, col. (1968); Blakely, *Proc. Linn. Soc. N.S.W.* 47: t. 46 (1922), as *Loranthus pendulus*; Wauer in Ewart, *Weeds . . . Vict.* t. opp. 28, col. (1909), as *L. pendulus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 132 A & B (1970).

*Vern.*: Drooping Mistletoe. *Distr.*: ACDEHJKMNPRSTVW—also S.A., N.S.W., A.C.T.

—All 3 flowers of cyme *stalked*; stems and common peduncles bronzy-green and *shiny*, the latter 1-2" long; leaves *obtus*e (usually on porantherous species of *Eucalyptus*, but sometimes on *Acacia*): . .

**A. miquelii** (Lehm. ex Miq.) Van Tiegh. in *Bull. Soc. bot. Franc.* 41: 507 (1894).

*Loranthus miquelii* Lehm. ex Miq. in *Lehm. Plant Preiss.* 1: 280 (1845).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 333 c (1948), as *Loranthus miquelii*; Blakely, *Proc. Linn. Soc. N.S.W.* 47: t. 45 (1922), as *L. miquelii*; Chippendale, *Wild-flowers Cent. Aust.* 13, col. (1968).

*Vern.*: Box Mistletoe. *Distr.*: ABCDHJMNRSVW—also throughout the whole of mainland Australia, both temperate & tropical.

#### LYSIANA Van Tiegh. (1894)

**L. exocarpi** (Behr) Van Tiegh. in *Bull. Soc. bot. Franc.* 41: 603 (1894).

*Loranthus exocarpi* Behr in *Linnaea* 20: 624 (1847).

*Illust.*: Barlow, *Proc. Linn. Soc. N.S.W.* 88: 146 fig. 3 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 333 A-B (1948), as *Loranthus exocarpi*; Blakely, *Proc. Linn. Soc. N.S.W.* 50: t. 4 (1925), as *L. exocarpi*; Ewart, *Flor. Vict.* fig. 177 (1931), as *L. exocarpi*; Cookson in Ewart, *Handb. For. Trees* t. 38D (1925), as *L. exocarpi*.

*Vern.*: Harlequin Mistletoe. *Distr.*: ABCMNP—also temperate parts of all mainland States, except S.W. West. Aust.

#### DENDROPHTHOË Mart. (1830)

**D. vitellina** (F. Muell.) Van Tiegh. in *Bull. Soc. bot. Franc.* 42: 86 (1895).

*Loranthus vitellinus* F. Muell. *Ess. Plants coll. Fitzalan* 12 (1860).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 477, col. (1968); Leithhead, *Wild Life (Melb.)* 11: 210 (1949); Blakely, *Proc. Linn. Soc. N.S.W.* 50: t. 9 & 10 (1925).

*Vern.*: Long-flower Mistletoe. *Distr.*: Z—also N.S.W., Qd (as far N. as Atherton Tableland).

#### KORTHALSELLA Van Tiegh. (1896)

**K. japonica** (Thunb.) Engler in Engler & Prantl *Natürl. Pflfam. Nachtr.* III<sup>1</sup>: 138 (1897).

*Viscum japonicum* Thunb. in *Trans. Linn. Soc., Lond.* 2: 329 (1794);

*V. opuntia* Thunb. *Flor. jap.* 64 (1784)—*nom. illeg.*;

*K. articulata* Blakely in *Proc. Linn. Soc. N.S.W.* 53: 32-33, t. 1 (1928).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 334 (1948), as *K. opuntia*; Robbins, *Vict. Nat.* 53: 201 fig. 1-12 (1937), as *K. articulata*; Blakely, *Proc. Linn. Soc. N.S.W.* 53: t. 1 opp. 150 (1928), as *K. articulata*; Little in Beadle et al., *Handb. vasc. Plant. Sydney District & Blue Mtns.* 312 fig. 48 (1962).

*Vern.*: Jointed Mistletoe. *Distr.*: WZ—also W.A., S.A., N.S.W.

## NOTOTHIXOS Oliver (1863)

*N. subaureus* Oliver in *J. Linn. Soc. (Bot.)* 7: 103 (1863).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 474, col. (1968); Robbins, *Vict. Nat.* 53: 201, fig. A-E (1937); Blakely, *Proc. Linn. Soc. N.S.W.* 53: t. 6 [inter 150 & 151] (1928).

*Vern.*: Golden Mistletoe. *Distr.*: Z (Mallacoota)—also N.S.W., Qd. On *Dendrophthoe vitellina* & *Muellerina eucalyptoides*.

[B. A. Barlow in *Proc. Linn. Soc. N.S.W.* 89: 268 (1964) recognizes the subfamily *Viscoideæ* as a distinct family, *Viscaceæ* Miq. (1856), differing from *Loranthaceæ* (*sens. strict.*) in its embryo which has a single sac and very short suspensor, also in the position of the viscous layer of the fruit (within and *not* outside the vascular bundles). If this view be adopted, then *Korthalsella* and *Notothixos* would be transferred to *Viscaceæ*.

A "Revision of the Loranthaceæ of Australia and New Zealand" was published by Barlow in *Aust. J. Bot.* 14: 421-499 (1966).]

## Family POLYGONACEÆ

1. Perianth of 3, 4 or 5  $\pm$  equal segments, without teeth, sometimes petaloid 3  
 Perianth (at least in female flowers) of 6 segments in 2 unequal series, bearing teeth, spines or tubercles in the fruiting stage 2
2. Outer 3 perianth-segments of female flowers awn-tipped (becoming 3 very sharp rigid spreading spines around the fruit), much larger than the 3 ovate, awnless inner segments (glabrous annual with ovate, usually cordate leaves) \*Emex (p. 70)  
 Outer 3 perianth-segments *not* awned, always smaller than inner 3 which become enlarged and often burr- or hop-like in fruit (perennials) Rumex (p. 71)
3. Flowers bisexual; perianth *not* or hardly enlarging in fruit (herbs) Polygonum (p. 74)  
 Flowers unisexual; perianth enlarging in fruit, when often  $\pm$  fleshy (shrubs, sometimes climbing) Muehlenbeckia (p. 77)

## \*EMEX Neck. (1791)

\**E. australis* Steinh. in *Ann. Sci. nat. (Bot.)* sér. 2, 9: 195, t. 7, fig. 16 (1838) in *adnot.*

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 64, 65 col., 66 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 338 (1948); Ewart, *Flor. Vict.* fig. 181 (1931); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 4, 4: 293 & 294, col. (1963); Mahood in Chippendale, *Poison. Plant. N. Terr.* Ext. Art. n. 2 part II: fig. 12 (1958); Everist, *Common Weeds Farm & Pasture* fig. 38 (1957).

*Vern.*: Spiny Emex, Three-cornered Jack. *Distr.*: AGNP—also W.A., S.A., N.S.W., Qd, Cent. Aust., N.Z.

## RUMEX L. (1753)

1. Leaves *hastate* or *sagittate*, usually *sour to taste*; flowers *unisexual*, the fruiting valves *entire* (rhizomic or tuberous-rooted perennials *not* growing in water) 8  
 Leaves *never* hastate, but sometimes cordate at base; flowers *bisexual* or, if otherwise, then the plant water-loving and fruiting valves *boldly* toothed (habit neither rhizomic *nor* tuberous) 2
2. Valves of fruiting perianth edged with conspicuous *rigid teeth* 4  
 Valves of fruiting perianth *entire* (but each with a large dorsal tubercle) 3
3. Inflorescence *dense*, with *crowded whorls* of flowers; fruiting valves *dilated*,  $\pm$  *orbicular*, *reticulate-veined*, 3.5-5.5 mm. long, with tubercle  $< \frac{1}{2}$  the length (leaves typically with undulate, strongly crisped margins):

\**R. crispus* L. *Spec. Plant.* 1: 335 (1753).

*Illust.*: Meadly, *Weeds W. Aust.* 68 col. & 69 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 355 G (1948)—fr.; Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 7: t. opp. 620, col., 622 (1958); Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 25 (1940); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 90, pp. 177 & 178 (1909); Leigh & Mulham, *Pastoral Plants Riverine Plain* 42 col., 43 (1965).

*Vern.*: Curled Dock. *Distr.*: ABCDGHJKMNPRSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Inflorescence *open*, with *distant whorls* of flowers; fruiting valves *oblong*, not reticulate, 2-3 mm. long, with tubercle at least  $\frac{1}{2}$  the length (lower leaves  $\pm$  undulate on margins):

\**R. conglomeratus* Murr. *Prodr. Stirp. gottingens.* 52 (1770).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 F (1948); Paté, *Flor. Afr. Nord.* 7: fig. 1243 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 90 (1909).

*Vern.*: Clustered Dock. *Distr.*: EJKMNPSVWZ—also W.A., S.A., N.S.W., A.C.T., Qd, N.Z.

4. Fruiting valves *devoid of tubercles*, 4 mm. long, with slender *hooked awn-like apices* and 2-4 long *hooked teeth* on each side (flowers in distant whorls on the few long, straight, leafless racemes; leaves narrow-oblong to lanceolate):

*R. brownii* Campd. *Monogr. Rumex* 64 (1819) *in clavis*.

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 B (1948); Whittet, *Weeds (N.S.W. Dep. Agric.)* t. 57, col. (1958); Maiden, *Agric. Gaz. N.S.W.* 28: t. opp. 328, col. (1917); Burbidge, *Flor. Aust. Cap. Terr.* fig. 135 (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 43 (1965).

*Vern.*: Slender Dock. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd. Naturalized in parts of Britain.

—Fruiting valves with *straight teeth*, their apices *not* awn-like (if ever long-pointed, then panicle-branches numerous and flexuose or leafy and with tuberculate valves) 5

5. Inflorescence and its branches *erect*; fruiting valve  $\pm$  tuberculate, with 1-2 teeth on each margin 7  
 Inflorescence *divaricate*; branches spreading at a *wide angle*, often flexuose, at length *entangled*; fruiting valve with 3-6 teeth on each side (if only 2 teeth, then valve without a tubercle) 6
6. Lower leaves  $<1"$  wide, lanceolate; branches *numerous*, intricate and *strongly flexuose*; fruiting valve *without* any tubercle, but each margin with 1 or 2 (seldom 3) irregular teeth:

**R. dumosus** A. Cunn. ex Meissn. in *DC. Prodr.* 14: 62 (1856).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 D (1948); Burbidge, *Flor. Aust. Cap. Terr.* fig. 135 D (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 43 (1965).

*Vern.*: Wiry Dock. *Distr.*: BCDEJMN—also S.A., Tas., N.S.W., A.C.T.

[In *Öst. bot. Z.* 84: 43 (1935) K. H. Rechinger f. established the segregate species *R. dumosiformis*, with fruiting valves  $\pm$  2 mm. broad, each having a minute tubercle and teeth *longer* than half the width of valves (*cf.* valves  $\pm$  3 mm. broad, *non-tuberculate* and with teeth *shorter* than half the valve-width in typical *R. dumosus*). This segregate is said to occur along the Murray R. (Victoria), but in the present writer's opinion its distinctiveness is open to question—a specimen (from N.S.W.) in Kew Herbarium, labelled *R. dumosiformis* by Rechinger, has no apparent callosities on the fruiting perianth and its general facies is precisely that of typical *R. dumosus*.]

—Lower leaves  $>1"$  wide, oblong and  $\pm$  *fiddle-shaped* (with constriction toward base of blade); branches *few or several*, not or only slightly flexuose; fruiting valve with large *dorsal tubercle* and 4-6  $\pm$  regular teeth along each margin:

**\*R. pulcher** L. *Spec. Plant.* 1: 336 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 955 on p. 529 (1952); Paté in *Flor. Afr. Nord.* 7: fig. 1240 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 91 fig. 3, col. (1909); Butcher, *New ill. Brit. Flor.* 1: 920 (1961).

*Vern.*: Fiddle Dock. *Distr.*: ACEJKNPSTWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

7. Lower leaves ovate-oblong, *obtuse*, up to 1 ft. long and always  $>2"$  broad, the margins plane; whorls of *bisexual* flowers relatively close, almost *devoid* of subtending leaves; fruiting valves *broadly winged*, prominently tuberculate:

**\*R. obtusifolius** L. *Spec. Plant.* 1: 335 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 c (1948); Muenscher, *Weeds* 201 (1935); Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 26 (1940); Anon. in *Flor. Afr. Nord* 7: fig. 1242 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: 175, 178 (1909).

*Vern.*: Broad-leaf Dock. *Distr.*: ADJKMNPSW—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Lower leaves lanceolate, *acute*, usually 1-2" wide, with *plane margins*;

whorls of *unisexual* flowers (male above, female on lower part of inflorescence) with conspicuous *floral leaves*; fruiting valves *not* or hardly winged, 6-8 mm. wide (including long teeth), only *obscurely tuberculate* (water plant with hollow, *inflated stem-internodes*):

*R. bidens* R. Br. *Prodr. Flor. Nov. Holl.* 421 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 H (1948).

*Vern.*: Mud Dock. *Distr.*: CDEJKMNPZ—also S.A., Tas., N.S.W., Qd.

—As for the last, but leaves  $<1''$  wide (often  $\pm$  linear) with *crisped margins*, flowers all *bisexual*, the *prominently tuberculate* fruiting valves 3-4 mm. wide and stems *never inflated* (plant minutely papillose and  $\pm$  glistening when alive):

*R. crystallinus* Lange *Ind. Semin. Hort. haun.* 28 (1861).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 E (1948); Leigh & Mulham, *Pastoral Plants Riverine Plain* 42 col., 43 (1965).

*Vern.*: Glistening Dock. *Distr.*: ABCHLMPR—also S.A., N.S.W., Cent. Aust., N. Terr.

[In *Öst. bot. Z.* 84: 40 (1935) K. H. Rechinger f. described a segregate Victorian species, *R. tenax*—almost co-extensive with *R. crystallinus* but differing, presumably, in its larger perianth valves ( $>2$  mm. long) and *absence* of glistening papillæ from the foliage. The present writer fails to discern any such constant criteria among Australian material from a wide range, and, at Kew Herbarium, the specimens determined by Rechinger as *R. tenax* are undoubtedly papillose. His key description of "*minutissimæ*" for the perianth-valves in *R. crystallinus* would seem to be based upon immature or unusually stunted plants. J. M. Black, in *Flor. S. Aust.* ed. 2: 281 (1948), has ignored *R. tenax* completely.]

8. Plant to 1 ft. high, *erect*, slender, spreading extensively by *filiform rhizomes*; leaves  $<2$  cm. wide, several times as long as broad; fruiting perianth inconspicuous:

\**R. acetosella*, sp. agg.

Incl. *R. acetosella* L. *Spec. Plant.* 1: 338 (1753), *R. angiocarpus* Murb. in *Acta Univ. lund.* 27<sup>5</sup>: 46 (1892), etc.

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 70 col., 73 (1965); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 6: 294 & t. opp. 292, col. (1957); Royce, *ibid.*, ser. 4, 4: 225 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 336 (1948); Muenscher, *Weeds* 199 (1935); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 7 A-E (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 92 fig. 3, col. (1909); Leigh & Mulham, *Pastoral Plants Riverine Plain* 41 col., 43 (1965).

*Vern.*: Sheep Sorrel. *Distr.*: ABCDEHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[Hj. Eichler, in *Suppl. J. M. Black's Flora S. Aust.* (ed. 2): 104 (1965), has replaced the name *R. acetosella* by *R. angiocarpus* Murb. The latter Eurasian species has been distinguished on the basis of its fruiting perianth which is tightly appressed to the nut (not free as in *R. acetosella*), its relatively longer fruits (1.3-1.5  $\times$  0.8 mm.) and chromosome number ( $2n=14$ ). But, from evidence

adduced by L. A. S. Johnson in *Contr. N.S.W. Herb.* 3: 166-69 (1962), there appears to be little correlation with respect to these features in New South Wales. Until further detailed investigation, the author prefers to leave all Victorian populations under the aggregate name *R. acetosella*.]

—Plant with vigorous, robust, *climbing branches* several to many feet long; rootstock both *stoutly rhizomic and tuber-bearing*; leaves 2 cm. wide or more, almost *as broad as long*; panicle very large, with flexuose branches; fruiting perianth purplish,  $\pm$  orbicular, 7-10 mm. wide, its 3 *broad papery wings* boldly reticulate:

\**R. sagittatus* Thunb. *Prodr. Plant. capens.* 67 (1794).

*R. luxurians* L. f. *Suppl. Plant.* 212 (1781), non L. *Mant. Plant.* 1: 64 (1767).

*Vern.*: Rambling Dock. *Distr.*: BKNPS—also Tas., N.S.W., Qd.

[*R. vesicarius* L. (Bladder Dock), native to the eastern Mediterranean region and western Asia, has been well established for a number of years in the Flinders (S.A.) and Barrier (N.S.W.) Ranges, also in Cent. Australia; latterly it has appeared in the Red Cliffs and Merbein Cemeteries, and it may be anticipated in other parts of far N.W. Victoria. This lush glabrous annual is of some importance as a sheep fodder in dry inland areas, and its large (to 1" long and wide), inflated, translucent, pink and net-veined fruiting perianths are highly ornamental. Black in *Flor. S. Aust.* ed. 2: 282 (1948) mistakenly identified South Australian populations with the closely related, but readily distinguishable, species *R. cyprius* Murb. (syn. *R. roseus* L.).]

### POLYGONUM L. (1753)

1. Leaves rounded at base or the blade tapering into petiole, *never hastate* 3  
Leaves conspicuously *hastate or sagittate* at base 2
2. Stem and branches straggling, with stiff *reflexed hairs* at the angles; leaves *lanceolate, hairy* on midribs; peduncles axillary, dichotomous; flowers *pink, in short spikes* (riparian plant):

*P. strigosum* R. Br. *Prodr. Flor. Nov. Holl.* 420 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 272, col. (1968).

*Vern.*: Spotted Knotweed. *Distr.*: DEJKNSTVWZ—also Tas., N.S.W., Qd.

—Stems twining, *glabrous*; leaves *ovate, glabrous*; flowers *white in axillary clusters* or  $\pm$  leafy terminal racemes (weed of cultivation):

\**P. convolvulus* L. *Spec. Plant.* 1: 364 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 340 (1948); Everist, *Common Weeds Farm & Pasture* fig. 69 (1957); Matthews, *N.Z. J. Agric.* 104<sup>a</sup>: 477, col. (1962); Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: fig. 24 c (1940); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 94 fig. 3, col. (1909).

*Vern.*: Black Bindweed. *Distr.*: CDEJKNP—also S.A., N.S.W., Qd, N.Z.

3. Flowers in *distinct spikes* without leafy bracts, mostly crowded

Flowers either *solitary* or *1-5 together* in the axils of leaves, bracts or silvery stipules; stems wiry 4

4. Stem and numerous branches stiffly *erect*, *leafless* in the upper portions; flower-clusters in axils of shorter torn silvery bracts, distant along very *slender naked* branches; perianth-segments  $\pm$  3 mm. long, pinkish, reticulate with *numerous prominent veins*; nut smooth, shining:

\**P. patulum* Bieb. *Flor. taur.-caucas.* 1: 304 (1808).

*P. bellardii* auctt., non All. *Flor. Ped.* 2: 205, t. 90 fig. 2 (1785).

*Illust.*: Coste, *Flor. Franc.* 3: fig. 3152 (1906), as *P. Bellardi*.

*Vern.*: Knotweed. *Distr.*: BCHM.

—Stems  $\pm$  *prostrate*, *leafy throughout* 5

5. Stems *elongated*; leaves usually 1-4 cm. long, the *lateral nerves prominent beneath*; perianth  $\pm$  3 mm. long, the segments with few *inconspicuous veins*; nut *dull*, minutely granular:

\**P. aviculare* L. *Spec. Plant.* 1: 362 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 339 (1948); Muenscher, *Weeds* 193 (1935); Koppel, *Flor. Israel* t. [88] (1952); Paté in *Flor. Afr. Nord* 7: fig. 1229 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 93 fig. 1, col. (1909).

*Vern.*: Prostrate Knotweed (Wireweed, Hogweed). *Distr.*: ABCDEHJKLMNPRS TVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

[*P. aviculare* in the broad sense is an aggregate species, several elements of which have been assigned individual specific rank, e.g. *P. littorale* Link, *P. rurivagum* Jord., *P. æquale* Lindm. and *P. calcatum* Lindm. are segregated by some British authorities who attach importance to habit, leaf-size and certain features of the nut. A collection from Lake Martin near Cressy (Mar. 1960) consisted of prostrate mat-plants with exceptionally small leaves (5-7 mm. long); it may be referable to *P. calcatum*.]

—Stems short and *compact*, much-branched; leaves usually <1.5 cm. long, *only the midrib conspicuous beneath*; perianth <2 mm. long; nut *smooth, shiny*:

*P. plebeium* R. Br. *Prodr. Flor. Nov. Holl.* 420 (1810).

*Illust.*: Bailey, *Weeds & susp. poison. Plants Qd* 167 fig. 296 (1906).

*Vern.*: Small Knotweed. *Distr.*: ACERW—also S.A., N.S.W., Qd, Cent. Aust., N.Z.

6. Stems and under-surfaces of leaves *whitened* with a dense *floccose indumentum*; leaves lanceolate; spikes in terminal panicles, dense, brownish:

\**P. lanigerum* R. Br. *Prodr. Flor. Nov. Holl.* 419 (1810).

*Vern.*: Woolly Knotweed. *Distr.*: AW (Snowy R.)—also S.A., N.S.W., Qd.

—Vestiture of stems and foliage bristly or absent, *never floccose* 7

7. Stems and peduncles *glabrous* 9



Stems and peduncles *hirsute*

8

8. Prostrate perennial; leaves 1-2" long, the lamina usually *glabrous*; spikes 1-2 cm. long, chiefly *axillary*, the flowers *greenish*:

*P. prostratum* R. Br. *Prodr. Flor. Nov. Holl.* 419 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 I-K (1948).

*Vern.*: Creeping Knotweed. *Distr.*: ACDEFJLMNPSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Erect annual or perennial; leaves 3-4" long, the lamina (as well as the stems) conspicuously and *adpressedly hirsute*; spikes 2-5 cm. long, slender, in a *terminal panicle*, with *pink* flowers:

*P. subsessile* R. Br. *Prodr. Flor. Nov. Holl.* 419 (1810).

*Vern.*: Hairy Knotweed. *Distr.*: EKNSWZ—also Tas., N.S.W., Qd.

9. Spikes slender, *interrupted*, *nodding*, often elongated, sometimes solitary and terminal; perianth white or greenish, with raised *glandular tubercles*; nut *dull* (riparian plant with hot *peppery taste*, usually 2-3 ft. high):

*P. hydropiper* L. *Spec. Plant. 1*: 361 (1753).

*Illust.*: Muenscher, *Weeds* 196 (1935); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 6 n (1951); M. E. R. in Allan, *ibid.* 83: fig. 34 c (1940); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 201 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 94 fig. 2, col. (1909).

*Vern.*: Water-pepper. *Distr.*: DEJNRSTVWZ—also N.S.W., Qd, A.C.T., N.Z.

—Spikes  $\pm$  *dense and continuous*, usually 2 or more in a panicle; perianth *not* glandular or only very sparsely so; nut *shining* (taste of plant mild).

10

10. Tall plant (to 3 ft. or more); leaves often 3-6" long; stipules *without* marginal bristles, rarely with a few cilia; spikes several in a branched panicle, *dull pink* or *greenish*:

*P. lapathifolium* L. *Spec. Plant. 1*: 360 (1753).

*Illust.*: Pomeroy in Mason, *Flor. Marshes Calif.* fig. 205 (1957); Paté in *Flor. Afr. Nord* 7: fig. 1222 (1961); Butcher, *New ill. Brit. Flor. 1*: 898 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 93 fig. 4, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 136 (1970).

*Vern.*: Pale Knot-weed. *Distr.*: ADEMNSTVW—also S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Small plants,  $\pm$  *procumbent*; stipules fringed with *conspicuous bristles*; spikes with *bright pink* or reddish flowers (leaf often with a large *dark blotch*)

11

- 11 Spikes *slender, acute*, rather few-flowered and  $\pm$  *interrupted*, 2-4 cm. long; pedicles *not* exerted from bracts; nut 2-2.5 mm. long, almost *biconvex*:

*P. minus* Huds. *Flor. angl.* 148 (1762).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 341 (1948); Hegi, *Ill. Flor. Mittel-Eur.* 3: 203: fig. h-m (1909); Butcher, *New ill. Brit. Flor.* 1: 902 (1961).

*Vern.*: Slender Knotweed. *Distr.*: CDEJKLMNPRSTVWZ—also S.A., Tas., N.S.W., Qd, Cent. Aust.

[In his *Flor. N.Z.* 1: 225 (1961) H. H. Allan resurrected the name *P. decipiens* R.Br. *Prodr. Flor. Nov. Holl.* 419 (1810) for this frequent Australian and New Zealand plant, with the synonymy "*P. serrulatum* auct. non Lag.". More recently HJ. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 104 (1965), referred it to *P. serrulatum* Lag. Bentham, *Flor. aust.* 5: 269 (1870), had remarked under *P. minus*: "In Australia some specimens agree with the commonest European forms." The precise relationships of Victorian populations are as yet not at all clear and, until the whole group is critically revised, it seems better to leave them all under *P. minus* (sens. lat.)]

—Spikes stout, dense, obtuse, 1-3 cm. long; pedicels exerted from bracts; nut  $\pm$  3 mm. long, bluntly trigonous with slightly concave faces:

\**P. persicaria* L. *Spec. Plant.* 1: 361 (1753).

*Illust.*: Ewart, *Flor. Vict.* fig. 179 (1931); Muenscher, *Weeds* 193 (1935); Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 28 (1940); Matthews, *N.Z. J. Agric.* 104: 23, col. (1962); Hegi, *Ill. Flor. Mittel-Eur.* 165, 201 (1909). *Vern.*: Persicaria (Redshank in N.Z.). *Distr.*: NPSTV—also N.S.W., N.Z.

[The East Siberian *P. sachalinense* F. Schmidt ex Maxim. is a robust, extensively rooting, glabrous perennial, the scrambling seasonal shoots of which may attain 10 ft. or more. It has large ovate-oblong, slightly cordate leaves (6-12" long and up to 5" broad) and very numerous creamy flowers in large, rather dense axillary panicles; the enlarged fruiting perianth is narrowly 3-winged and 10-12 mm. long. This impressive plant has been recommended as a fire-resistant soil-binder for mountain road-cuttings prone to erosion, and was noted as an occasional garden escape in Victoria at Foster (June 1954) and Lilydale (Feb. 1956).

*P. orientale* L. (Prince's Plume or Oriental Knotweed) is a broad-leaved hairy annual to 6 ft. high, with dense nodding racemes of rosy-magenta flowers (among the largest in the genus); it is widespread in the Old-World tropics, indigenous to Queensland and New South Wales, and a persistent plant in Victorian gardens from which the copious seed may escape occasionally. The Himalayan *P. capitatum* Buch.-Ham. ex D. Don (Pink-head Knotweed) is a hardy prostrate creeper with close-set, ovate, reddish leaves 1-2" long and many small pink flowers crowded into globose heads on short erect peduncles. It is frequently grown in Victoria to cover up embankments and rockwork, and the trailing stems root very freely at their nodes (thereby rapidly extending any initial patch of the plant, especially under damp shady conditions.)]

#### MUEHLENBECKIA Meissn. (1840)

1. Leaves always present, orbicular to ovate (or broadly triangular), hardly longer than broad; fruiting perianth usually  $\pm$  succulent 4
- Leaves linear to lanceolate and much longer than broad, but sometimes absent from older branches 2

2. Divaricate (often prostrate)  $\pm$  spiny, rigid shrub to 1 ft. high, with glaucous bark; flowers numerous and *sessile in dense axillary sessile clusters* subtended by papery involucral bracts; fruiting perianth 2-4 mm. wide, hard, *quadrangular* and  $\pm$  top-shaped (uncommon Mallee and Wimmera plant):

*M. horrida* H. Gross in *Bot. Jb.* 49: 347 (1913).

*Vern.*: Spiny Lignum. *Distr.*: ABGH—also ?N.S.W. (far south-west).

—Branches *never* at once divaricate and spiny and with the flowers in dense sessile clusters 3

3. Rigid, *erect*, often  $\pm$  *glaucous* shrub 1-3 ft. high; branches *very slender* with scattered *erect leaves* (sometimes hastate on young shoots); flowers *pedicellate*, in axillary clusters of 2-4, the segments *divided to base*; fruiting perianth *ovoid, succulent*, translucent-whitish; nut  $\pm$  *globular*:

*M. diclina* (F. Muell.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 636 (1917).

*Polygonum diclinum* F. Muell. in *Trans. phil. Soc. Vict.* 23 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 335 L (1948); Schoenfeld in Ewart, *Plant indig. Vict.* t. 80 opp. 17 (1910), as *M. polygonoides*; Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 123 (1965); Mueller, *Key Syst. Vict. Plant.* 2: fig. 42 (1886), as *M. polygonoides*.

*Vern.*: Twiggy Lignum. *Distr.*: ABFSVWZ—also W.A., S.A., N.S.W.

—Intricately branching, *divaricate* shrub usually 3-6 ft. high; branches *leafless* except when very young; flowers *sessile* in small bracteate clusters on *interrupted spikes* which are sometimes paniculate, the segments *coalescing in a tube* toward base; fruiting perianth  $\pm$  *turbinate, dry*; nut prominently *trigonus*:

*M. cunninghamii* (Meissn.) F. Muell. *Fragm. Phyt. Aust.* 5: 91 (1865).

*Polygonum cunninghamii* Meissn. in *DC. Prodr.* 14: 85 (1856).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 241, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 37 (1967).

*Vern.*: Tangled Lignum. *Distr.*: ABCDFGHJKLMNP—also most inland parts of mainland Australia.

4. Leaves  $<1$  cm. long, almost orbicular; flowers *solitary* (rarely 2-3 together) in the upper axils (small diffuse or prostrate semi-shrub, forming *wiry mats* in rocky valleys of eastern highlands):

*M. axillaris* (Hook. f.) Walp. *Ann. Bot. syst.* 1: 552 (1848-49).

*Polygonum axillaris* Hook. f. in *Hook. Lond. J. Bot.* 6: 278 (1847).

*Illust.*: Salmon, *Field Guide Alpine Plants N.Z.* t. 131, col. (1968); Laing & Blackwell, *Plants N.Z.* ed. 6: fig. 53 (1957); Cheeseman, *Ill. N.Z. Flor.* t. 165 (1914); Burbidge, *Flor. Aust. Cap. Terr.* fig. 137 (1970).

*Vern.*: Matted Lignum. *Distr.*: SVW—also Tas., N.S.W., A.C.T., N.Z.

- Leaves  $>2$  cm. long; flowers in *slender spikes* or panicles (twining or climbing, often tall plants with leaves *cordate* or *hastate* at base) 5
5. Leaves *membranous*,  $\pm$  *triangular*, *long-acuminate*, the petiole at least as long as blade; spikes very loose, their slender flexing rhachises  $\pm$  capillary ( $<0.5$  mm. wide), usually  $>3''$  long and forming diffuse panicles; perianth  $\pm 1$  mm. long, globular and succulent in fruit; nut almost smooth (very rare, tall climber of far E. Gippsland):

*M. gracillima* Meissn. in *DC. Prodr.* 14: 145 (1856).

*Illust.*: Bailey, *Weeds & susp. poison. Plants Qd* 171 fig. 301 (1906).

*Vern.*: Slender Lignum. *Distr.*: Z—also N.S.W., Qd.

- Leaves *not* membranous (sometimes thickened), *ovate* to *orbicular*, *obtuse* to shortly *acuminate*, the petiole manifestly *shorter* than blade; spikes to  $3''$  long, *not* capillary; perianth 2 mm. long or more 6
6. Nut  $\pm$  globoid, *not* rugose; leaves green, often with undulate margins; spikes mostly *axillary*, with relatively dense flower-clusters; fruiting-perianth enlarged and  $\pm$  *succulent* (widespread coastal plant):

*M. adpressa* (Labill.) Meissn. *Plant. vasc. Gen.* 227 (1840).

*Polygonum adpressum* Labill. *Nov. Holl. Plant. Specim.* 1: 99, t. 127 (1806).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 296, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 342 (1948); Ewart, *Flor. Vict.* fig. 180 (1931).

*Vern.*: Climbing Lignum. *Distr.*: CDEKNPTWZ—also W.A., S.A., Tas., N.S.W.

[Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 105 (1965), has retained as a distinct species, *M. gunnii* (Hook. f.) Walp., the taxon usually referred to *M. adpressa* var. *hastifolia* Meissn.—see colour plate in *Curtis's bot. Mag.* t. 3145 (1832). This coastal plant (the "Macquarie Grape"—Tas.) has narrower, more pointed, hastate leaves and larger, succulent fruiting-perianths. Comparable material has not yet been reported from Victoria.]

- Nut ovoid, *deeply rugose*; leaves often  $\pm$  glaucous and thickened; spikes often forming large *terminal panicles*, with loose interrupted flower-clusters; fruiting-perianth  $\pm$  *membranous* (rare riverside plant of E. Gippsland):

*M. rhyticarya* F. Muell. *Fragm. Phyt. Aust.* 5: 92 (1965).

*Vern.*: Wrinkle-nut Lignum. *Distr.*: W—also N.S.W., Qd.

[The New Zealand *M. complexa* Meissn. (Wire-vine, Maidenhair Creeper or Pohuehue—Maori name) is a vigorous creeper with tough, black, wiry and closely intertwining stems, thickish rotund glabrous leaves (5-15 mm. in diameter) and translucent, waxy-white, very fragrant flowers in small axillary spikes. It is used extensively as a quick cover for fencing, old out-houses, etc., and tends to persist in gardens once the strong rooting system is established.

The Buckwheat (*Fagopyrum esculentum* Moench)—from Central Asia—is grown in many countries as a cereal crop or for green fodder, and appears occasionally in Victorian gardens. This glabrous annual (to 2 ft. high) is closely related to

species of *Polygonum*, from which it differs in having flowers in a *cymose panicle* and large fruits 2-3 times as long as the perianths.]

### Family CHENOPODIACEÆ

1. Leaves absent, the branches fleshy and jointed, with embedded flowers and fruits 12  
 Leaves linear,  $\pm$  fleshy and often terete, quite entire (occasionally spine-tipped) 6  
 Leaves flat, usually broad and often toothed 2
2. Fruiting-perianth of 2 large connivent bracteoles, with or without appendages, sometimes inflated and spongy throughout (female flowers usually lower on the plant than male, or borne on distinct plants) *Atriplex* (p. 89)  
 Fruiting-perianth small, 3- to 5-lobed (if, rarely, with 1 or 2 lobes only, then the lobes minute and free), devoid of appendages but sometimes enlarging around fruit 4  
 Fruiting-perianth 5-lobed, appendaged with 5 wings or a single horizontally spreading wing 3
3. Annual with broad toothed leaves >2 cm. long (fruits often dark purplish) *\*Cycloloma* (p. 89)  
 Perennials with narrow entire leaves <1 cm. long *Kochia* (p. 102)
4. Perianth hardening into a thick corky husk around the seed-like fruit (annual or biennial with large broad leaves) *\*Beta* (p. 82)  
 Perianth membranous, of 1-3 segments (small procumbent annuals with leaf-blades <8 mm. long) *Dysphania* (p. 82)  
 Perianth herbaceous, of 4-5 (rarely 3) segments (annuals to shrubby perennials) 5
5. Fruit dry; chiefly herbaceous and often annual plants *Chenopodium* (p. 84)  
 Fruit succulent, berry-like, red or purple (occasionally golden); perennials, mostly shrubby *Rhagodia* (p. 82)
6. Fruiting-perianth bearing dorsal or terminal appendages (wings, horns, spines or teeth) 9  
 Fruiting-perianth without appendages, never embedded in wool 7
7. Perianth becoming enlarged, fleshy and coloured (yellow, red or purple), enclosing the fruit in a *flattened berry-like structure* (embryo curved around the endosperm of seed) *Enchylæna* (p. 107)  
 Perianth enlarged, hardened and sometimes gibbous in fruit (embryo curved around endosperm) *Threlkeldia* (p. 108)  
 Perianth not or scarcely enlarging in fruit 8
8. Flowers in axillary clusters of 3-9, the segments green or purplish and *succulent* (seed with spirally coiled embryo, but *no endosperm*) *Suaeda* (p. 111)  
 Flowers *solitary* in leaf-axils, the 5 whitish segments *rigid and scarious* (seed *endospermic*, with curved embryo) *Hemichroa* (p. 81)

9. Leaves and floral bracts pungent-pointed (prickly annual, with winged fruiting-perianth and spirally coiled embryo without endosperm) *Salsola* (p. 112)  
 Leaves not pungent-pointed (perennials with embryo curved around endosperm) 10
10. Appendages on fruiting-perianth consisting of spines or teeth (sometimes very short or embedded in wool) *Bassia* (p. 97)  
 Appendages consisting of 3 straight, spreading,  $\pm$  cylindrical, softly woolly horns *Malacocera* (p. 102)  
 Appendages entirely of broad, often membranous wings (occasionally obscured by hair), rarely a glabrous thickened protuberance 11
11. Major wing or wings of fruiting-perianth horizontal (vertical wings occasionally present also) *Kochia* (p. 102)  
 All wings (or the single flattened protuberance) vertical *Babbagia* (p. 108)
12. Seeds endospermic, permanently embedded in the enlarged bony axis of the spike; bracts and joint-lobes prominently *keeled*; flowers 3 in each row (rare plants confined to the far north-west Mallee) *Pachycornia* (p. 110)  
 Seeds falling away from the matured fruiting spike, usually together with the perianth; bracts and joint-lobes  $\pm$  rounded on the back 13
13. Flowers 3 in each row; seeds endospermic, neither bristly nor papillose, often smooth but sometimes wholly or partly granular *Arthrocnemum* (p. 108)  
 Flowers 5-7 in each row (occasionally 3 in the upper articles); seeds without endosperm, bristly or sharply papillose all over *Salicornia* (p. 110)

[The following tribal arrangement of genera follows that of E. Ulbrich in *Natürlichen Pflanzenfamilien* ed. 2, 16c: 445-452 (1934), except for the third tribe *Dysphanieæ* which F. Pax and K. Hoffmann (*l.c.* 272) had assigned to a distinct family (*Dysphaniaceæ*), purporting to have closer affinities with *Caryophyllaceæ*.]

### Tribe POLYCNEMEÆ

#### HEMICHROA R. Br. (1810)

Branches  $\pm$  pubescent in upper part; leaf-tip *straight* or almost so; stamens 5, *surrounding ovary*; style distinctly bifid (prostrate or ascending plant of coastal salt-marshes):

*H. pentandra* R. Br. *Prodr. Flor. Nov. Holl.* 409 (1810).

*Illust.*: Schoenfeld in Ewart, *Plants indig. Vict.* t. 77 opp. 14 (1910); Mueller, *Plants indig. Colon. Vict.* fig. 34 (1886), as *Polycnemum pentandrum*.

*Vern.*: Trailing Hemichroa. *Distr.*: ENPTW—also W.A., S.A., Tas., N.S.W.

Branches entirely *glabrous*; leaf-tip  $\pm$  *uncinate*; stamens 2, *lateral to ovary*; style shortly notched at summit (rare plant of saline clay-pans in Mallee):

**H. diandra** R. Br. *Prodr. Flor. Nov. Holl.* 409 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 457 (1948).

*Vern.*: Mallee Hemichroa. *Distr.*: A—also W.A., S.A., N.S.W., N. Terr.

[There appears to be good reason for assigning each of these two species (now both under *Hemichroa*) to separate genera, but a detailed study of seed-structure is called for. Even the family position of *Hemichroa* is questionable—it has been referred to *Chenopodiaceæ* by R. Brown (1810), Bentham & Hooker f. (1883), Volkens (1893) and Ulbrich (1934), but, because of its dry scarious perianth and united stamens, to the *Amaranthaceæ* by Moquin (1849), Bentham (1870), F. Mueller (1888), Ewart (1931) and J. M. Black (1948). Possibly the whole tribe *Polycnemeæ* (including *Hemichroa*) warrants recognition as a distinct family, but its inclusion under *Chenopodiaceæ* is favoured for the present key. No single character can be relied upon to separate *Chenopodiaceæ* from *Amaranthaceæ*.]

### Tribe \*BETEÆ

\*BETA L. (1753)

\***B. vulgaris** L. *Spec. Plant.* 1: 222 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 358 a (1948)—leaf; Paté in *Flor. Afr. Nord* 8: fig. 911 (1962); Volkens in Engler, *Natürl. PflFam.* III 1a: 57 (1893).

*Vern.*: Wild Beet. *Distr.*: NP—also S.A. (Mt. Lofty Range—silverbeet).

[Wild populations on the Victorian coast are apparently referable to var. *maritima* (L., *ut sp.*) Moq. in DC. *Prodr.* 13<sup>a</sup>: 56 (1849), which was elevated to subsp. *maritima* by Thellung in his *Flor. advent. Montpell.* 189 (1912).]

### Tribe DYSPHANIEÆ

DYSPHANIA R. Br. (1810)

**D. myriocephala** Benth. *Flor. aust.* 5: 165 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 356 (1948); Hope in Bailey & Gordon, *Plant. poison. & injur. Stock t. opp.* 67 (1887); Graff in Mueller, *Icon. aust. salsol. Plants* t. 36 (1890), as *D. litoralis*.

*Vern.*: Pigweed. *Distr.*: ACJMR—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[In the present treatment, *Dysphania* is retained at generic rank in a distinct tribe of the *Chenopodiaceæ*—a view endorsed by most recent writers on the Australian flora. In *Bot. Jb.* 63: 486 (1930), P. Aellen reduced the genus to a section of *Chenopodium*, which it outwardly resembles. F. Pax in *Natürl. PflFam.* III 1b: 92 (1889) had assigned the tribe *Dysphanieæ* to *Caryophyllaceæ*; but, in collaboration with K. Hoffmann, he gave it separate family rank in *Bot. Jb.* 61: 230 (1927), remarking that it formed a connecting link between *Chenopodiaceæ* and the *Caryophyllaceæ* (opposite-leaved).]

### Tribe CHENOPODIEÆ

RHAGODIA R. Br. (1810)

1. Flowers in *spikes* or short, slightly branched panicles; expanded perianth <4 mm. wide (usually 2-3 mm.) 4

Flowers in relatively large, *much-branched panicles* (or, if panicle ever reduced, then expanded perianth 4-6 mm. wide below fruit) 2

2. Whole plant *densely mealy-tomentose and whitish*, seldom >2 ft. high; leaves <2 cm. long, the blade shovel-shaped and truncate or hastate at base; mature perianth *larger than* fruit, flat, star-like, 4-6 mm. wide, mealy-white externally, glabrous and red on inner surface of lobes (straggling shrub of far north-west Mallee):

**R. gaudichaudiana** Moq. *Chenopod. Monogr. enum.* 11 (1840).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 169, col. (1968).

*Vern.*: Cottony Saltbush. *Distr.*: ABF—also W.A., S.A., N.S.W.

—Plants *not whitish*, 3-8 ft. high; leaves *green* (at least above) or sparingly grey-mealy, 2-4 cm. long (or, if less, then never hastate); mature perianth <4 mm. wide, hardly exceeding fruit 3

3. Petiole short (much < $\frac{1}{2}$  the length of leaf-lamina); blade usually *narrow*, oblong-linear to broadly oblanceolate, dark green above, whitish beneath, often  $\pm$  fleshy, the margins  $\pm$  *revolute* (coastal shrub):

**R. baccata** (Labill.) Moq. in *DC. Prodr.* 13<sup>2</sup>: 50 (1849).

*Chenopodium baccatum* Labill. *Nov. Holl. Plant. Specim.* 1: 71, t. 96 (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 279, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 344 (1948); Ewart, *Flor. Vict.* fig. 194 (1931); Graff in Mueller, *Icon. aust. salsol. Plants* t. 21 (1890), as *R. billardieri*.

*Vern.*: Seaberry Saltbush. *Distr.*: EKNPTWXZ—also W.A., S.A., Tas., N.S.W.

—Petiole at least  $\frac{1}{2}$  the length of leaf-lamina; blade *broad*, ovate or rhomboid to broadly spatulate (sometimes obtusely hastate at base),  $\pm$  grey-mealy on both surfaces, the margins *plane* (rare shrub of rocky gorges near Bacchus Marsh; flowers fragrant):

**R. parabolica** R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Illust.*: Bailey, *Compr. Cat. Qd Plants* fig. 385 (1913); Myers in Turner, *Forage Plants Aust.* t. opp. 48 (1891).

*Vern.*: Fragrant Saltbush. *Distr.*: N—also W.A., S.A., N.S.W., Qd, Cent. Aust.

4. Leaves *alternate*, *linear* to oblanceolate, thick, *fleshy*, with  $\pm$  *involute margins*, never hastate (rare, non-spiny desert shrub 2-5 ft. high):

**R. crassifolia** R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Vern.*: Fleshy Saltbush. *Distr.*: AB—also W.A., S.A., N.S.W., Qd, N. Terr.

—Leaves mostly *opposite*, rather broad, often hastate, *not* manifestly thick and fleshy, the margins *plane* or almost so 5

5. Foliage *whitish and mealy-tomentose* all over; branches often  $\pm$  *spinescent*; perianth 2-4 mm. wide (rigid Mallee shrub to 4 ft. high,



but sometimes <1 ft., often with an unpleasant odour as of stale fish):

*R. spinescens* R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Illust.*: Graff in Mueller, *Icon. aust. salsol. Plants* t. 22 (1890); Myers in Turner, *Forage Plants Aust.* t. opp. 49 (1891), as *R. hastata*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 73, col. (1965).

*Vern.*: Hedge Saltbush. *Distr.*: ABCGHJ—also most inland parts of mainland Australia.

—Foliage green, glabrous or almost so; branches never spinescent; perianth seldom >2 mm. (procumbent, sometimes trailing herbs or semi-shrubs) 6

6. Leaves acute, the lamina longer than broad; fruit red or yellow, 2-3 mm. wide (perennial, weak-stemmed herb, sometimes climbing):

*R. nutans* R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Illust.*: Graff in Mueller, *Icon. aust. salsol. Plants* t. 24 (1890); Myers in Turner, *Forage Plants Aust.* t. opp. 50 (1891); *J. Dep. Agric. Vict.* 3: 120 (1905); *J. Dep. Agric. W. Aust.* 13: 233 (1906); Leigh & Mulham, *Pastoral Plants Riverine Plain* 72 (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 188 (1970).

*Vern.*: Nodding Saltbush. *Distr.*: ABCDEGHJKMNPRTVWXZ—also all parts of Australia.

[The var. *oxycarpa* E. Gauba in *Vict. Nat.* 65: 167 (1948) differs in its ovoid orange fruit, seated on a prominently reflexing perianth. It was described from Loveday near Lake Bonney (Murray River), S.A., but extends into Victoria (west from Mildura).]

—Leaves obtuse, the spade-shaped lamina no longer than broad; fruit 1-2 mm. wide (procumbent, but rather rigid, semi-shrub):

*R. hastata* R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Vern.*: Saloop. *Distr.*: BCHKMNRVTW—also N.S.W., Qd.

### CHENOPODIUM L. (1753)

1. Divaricate shrub 3-9 ft. high; branches rigid, slender, often spinescent; leaves thick, linear-oblong to subspathulate, obtuse, entire; flowers in dense terminal spikes or panicles (plant of inundated ground in far north-west):

*C. nitrariaceum* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 5: 158 (1870).

*Rhagodia nitrariacea* F. Muell. in *Trans. phil. Inst. Vict.* 2: 73 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 346 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 28 (1890); *J. Dep. Agric. W. Aust.* 22 (July 1900); Myers in Turner, *Forage Plants Aust.* t. opp. 5 (1891), as *C. nitrariacea*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 63 (1965).

*Vern.*: Nitre Goosefoot. *Distr.*: ACFGJ—also all States of mainland Australia.

- Herbs, usually <3 ft.; branches never spinescent 2
2. Plant  $\pm$  *glandular-pubescent*, pleasantly *aromatic*, with toothed or lobed leaves; flowers in axillary clusters (rarely short spikes); perianth-segments 5 11
- Plant *glabrous or mealy*, sometimes with foetid odour but *not* aromatic 3
3. Perianth-segments 4, *erect*, pointed, 2-3 mm. long, in fruit becoming *much indurated*, white and rugose or irregularly angular toward base; stamen 1 (prostrate, green and almost glabrous plant of inundated, often saline ground in north-west; flowers in dense sessile axillary clusters):

**C. atriplicinum** (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 7: 11 (1869).

*Blitum atriplicinum* F. Muell. in *Trans. Vict. Inst.* 133 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 353 (1948); Ulbrich, *Natürl. PflFam.* ed. 2, 16 c: 496 fig. 188 (1934), as *Scleroblitum atriplicinum*; Mueller, *Icon. aust. salsol.* *Plants* Dec. 3: t. 30 (1890); Leigh & Mulham, *Pastoral Plants Riverine Plain* 61 (1965).

*Vern.*: Starry Goosefoot. *Distr.*: ABCGH—also S.A., N.S.W., Qd.

[E. Ulbrich in *Natürl. PflFam.* ed. 2, 16c: 495 (1934) established the monotypic genus *Scleroblitum* for *C. atriplicinum*, distinguished from *Chenopodium* by its *hardened*, erect, 4-partite perianth; most Australian workers have been reluctant to adopt this new segregate genus, but it was recently taken up in Hj. Eichler's *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 107 (1965).]

- Perianth-segments frequently 5, *not erect*, <2 mm. long, *never indurate* in fruit 4
4. Leaves all quite *entire*, never hastate; perianth 5-lobed 8
- Leaves (at least the lower) *toothed or hastate* 5
5. Stems weak, *decumbent or prostrate*; perianth-segments *glabrous* or almost so, *not* or only weakly keeled; stamens 1-4 (usually 1-2) 7
- Stems *erect*, often stout, 1-4 ft. high; perianth-segments  $\pm$  *mealy*, *distinctly keeled* along the back; stamens 5 6
6. Leaves *extending to top of inflorescence*, *green*, often shining on upper surface, the blades triangular to rhomboid and often almost as broad as long; seed *dull*, *sharply keeled*, the testa densely and  $\pm$  regularly *reticulated with minute pits*:

**\*C. murale** L. *Spec. Plant.* 1: 219 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 351 (1948); Davey, *J. Dep. Agric. Vict.* new ser. 21: 318 (1923); Hegi, *Ill. Flor. Mittel-Eur.* 3: 225 (1909); Paté in *Flor. Afr. Nord* 8: fig. 917 (1962); Ross-Craig, *Drawings Brit. Plants* 25: t. 17 (1968).

*Vern.*: Sowbane. *Distr.*: ABCEGJKMNPRVW—also all parts of Australia except N. Terr., N.Z.

- Leaves *usually reduced above*, leaving upper part of inflorescence bare, *dull and  $\pm$  mealy-white* on both surfaces, rhomboid to lanceolate, sometimes entire, the blade usually markedly longer than broad; seed *shining*, *bluntly and obscurely keeled*, the testa *not* densely pitted but with faint radial *striations or furrows*:

\**C. album* L. *Spec. Plant.* 1: 219 (1753).

*Illust.*: Muenscher, *Weeds* 207 (1935); Ewart, *Flor. Vict.* fig. 195 (1931); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: 90, fig. 30 A (1940); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 95 fig. 5, col. (1909); Ross-Craig, *Drawings Brit. Plants* 25: t. 15 (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 139 (1970).

*Vern.*: Fat Hen. *Distr.*: ACDJKMNPRTW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

[As used above, the name *C. album* covers an aggregate of closely related and plastic species, to be discriminated with certainty only by the testa-markings of their ripe seeds. The situation is further complicated by hybridism within the complex and with other related members of *Chenopodium*. It is possible that the European *C. opulifolium* Schrad., and several other related entities, may also occur in Victoria—these more or less resemble *C. album* and have rather similar seed-structures.]

—As for the last; but the boldly and sharply toothed leaves *bright green and almost glabrous*, the inflorescence *laxly spreading* and the testa marked with *deep radial furrows*:

\**C. sp.* [aff. *C. suecicum* J. Murr. in *Ung. bot. Bl.* 1: 341 (1902)]

*Distr.*: V (Suggan Buggan).

7. Leaves *thick* (often  $\pm$  fleshy), green above, *mealy-white beneath*, *sinate-toothed*, *shortly petiolate*; perianth-segments 2-4 (widespread plant of saline ground):

*C. glaucum* L. *Spec. Plant.* 1: 220 (1753).

*Illust.*: Muenscher, *Weeds* 206 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 3: fig. 545 f-o (1909); Butcher, *New ill. Brit. Flor.* 1: 486 (1961).

*Vern.*: Glaucous Goosefoot. *Distr.*: ACDEHJKNPVTZ—also W.A., S.A., Tas., N.S.W.

[In *Flor. S. Aust.* ed. 2: 291 (1948), J. M. Black distinguishes Australian populations as *C. ambiguum* R. Br. *Prodr. Flor. Nov. Holl.* 407 (1810), with the remark "scarcely differs from the world-wide *C. glaucum*." The slight variations in number of perianth-segments and margin of seed (more acute in *C. glaucum*) appear to be subspecific rather than specific criteria, and the older name is applied in its broad sense here. Hj. Eichler adopts *C. glaucum* subsp. *ambiguum* (R. Br.) Murr. & Thell. ex Thell., in his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 106 (1965).]

—Leaves *thin*, green on both surfaces, hastate but not otherwise toothed, on rather *long slender petioles*; perianth-segments 5 (rare plant of East Gippsland valleys):

*C. trigonon* Schult. *Syst. Veg.* 6: 275 (1820).

*C. triangulare* R. Br. *Prodr. Flor. Nov. Holl.* 407 (1810), non Forsk. (1775).

*Illust.*: Graff in Mueller, *Icon. aust. salsol. Plants* t. 26 (1890), as *C. triangulare*; Everist, *Common Weeds Farm & Pasture* fig. 83 (1957); White, *Qd agric. J.* 15: 172 (1921), as *C. triangulare*.

*Vern.*: Lax Goosefoot. *Distr.*: WZ—also N.S.W., Qd.

8. Leaves almost glabrous, *green on both surfaces* (weak, procumbent, almost odourless plant):

*C. trigonon* Schult. [See preceding species]

—Leaves mealy-white, at least on under-surfaces 9

9. Erect annual 1-4 ft. high, almost *odourless*; leaf-blades longer than broad, *acute*; flowers *numerous*, in long dense panicles:

\**C. album* L. [See p. 86]

—Procumbent annual, with *revolting odour* (as of bad fish); leaf-blades ovate or rhomboid, *acute*, 1-2.5 cm. long, with  $\pm$  *prominent* lateral veins; flowers in short axillary and terminal spikes; seed-coat *dull*, microscopically punctulate:

\**C. vulvaria* L. *Spec. Plant.* 1: 220 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 95 fig. 3, *col.* (1909); Paté, *Flor. Afr. Nord.* 8: fig. 916 (1962); Butcher, *New ill. Brit. Flor.* 1: 477 (1961); Ross-Craig, *Drawings Brit. Plants* 25: t. 14 (1968); Leigh & Mulham, *Pastoral Plants Riverine Plain* 64, *col.* (1965).

*Vern.*: Stinking Goosefoot. *Distr.*: JMNR—also S.A., N.S.W.

—Perennials <1 ft. high, *odourless* or nearly so; leaf-blades  $\pm$  ovate, *obtuse*, usually <1 cm. long; flowers relatively few in short  $\pm$  terminal spikes 10

10. Branches *procumbent*, *slightly mealy*; leaves appearing *greenish*, the lateral veins obscure; flowering spikes reduced to small clusters *shorter than* subtending leaves; seed-coat lacquered, bearing numerous fine *transverse striations*:

*C. pseudomicrophyllum* Aellen in *Candollea* 8: 8 (1939).

*C. microphyllum* F. Muell. in *Trans. phil. Inst. Vict.* 2: 74 (1858), *non* Thunb. (1794);

*C. cochlearifolium* Aellen *l.c.* 10 (1939).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 345 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 27 (1890), as *C. microphyllum*; Myers in Turner, *Forage Plants Aust.* t. opp. 53 (1891), as *C. microphyllum*.

*Vern.*: Small-leaf Goosefoot. *Distr.*: ACEFGHMNRV—also S.A., N.S.W.

—Branches *erect*, *densely mealy* and (with the leaves) appearing *white-tomentose*; flowering spikes 1-3 cm. long, *exceeding* the subtending leaves (desert plant of far north-west):

*C. desertorum* (J. M. Black) J. M. Black *Flor. S. Aust.* ed. 1, 2: 181 (1924).

*C. microphyllum* F. Muell. var. *desertorum* J. M. Black in *Trans. roy. Soc. S. Aust.* 46: 566 (1922).

?*C. anidiophyllum* Aellen in *Candollea* 8: 9 (1939).

*Vern.*: Frosted Goosefoot. *Distr.*: AF—also W.A., S.A., N.S.W.

[The type of *C. anidiophyllum* Aellen (*l.c.*) has not been examined in Melbourne; but, from the original description, it would seem to be merely a more robust and rather less mealy condition of *C. desertorum*.]

11. Leaves deeply pinnatisect; perianth-tube longer than lobes, coarsely reticulate in fruit; seed vertical (perennial with prostrate branches and chamomile-like aroma):

\**C. multifidum* L. *Spec. Plant.* 1: 220 (1753).

*Illust.*: Coste, *Flor. Franc.* 3: fig. 3087 (1906); Engler, *Natürl. PflFam.* III 1a: 60 (1893)—fl.; Paté in *Flor. Afr. Nord* 8: fig. 915 bis (1862).

*Vern.*: Scented Goosefoot. *Distr.*: CN—also S.A., N.S.W., A.C.T

—Leaves sinuate-toothed or almost entire; perianth-tube very short or obsolete, never reticulate 12

12. Erect annual or perennial 1-3 ft. high; leaves lanceolate, >2 cm. long; fruiting perianth depressed, almost glabrous, the lobes without keels; seed horizontal:

\**C. ambrosioides* L. *Spec. Plant.* 1: 219 (1753).

*Illust.*: Muenscher, *Weeds* 209 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 3: fig. 547 a-c & 557 z (1909); Bailey, *Weeds & susp. poison. Plants Qd* fig. 281 (1906); Paté, *Flor. Afr. Nord* 8: fig. 915 (1962).

*Vern.*: Mexican Tea. *Distr.*: W—also all mainland States, N.Z.

—Prostrate or ascending annuals <1 ft. high; leaves ovate or oblong in outline, <2 cm. long; perianth hairy; seed vertical 13

13. Perianth-segments narrow, rounded on back and incurved at summit (embracing the fruit), neither keeled nor cristate (widespread plant, often a weed in gardens):

*C. pumilio* R. Br. *Prodr. Flor. Nov. Holl.* 407 (1810).

*C. carinatum* sens. Ewart *Flor. Vict.* 453 (1931) pro parte.

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 347 (1948); Black, *Trans. roy. Soc. S. Aust.* 58: t. 10 (1934)—fr.; Graff in Mueller, *Icon. aust. salsol. Plants* t. 32 (1890), as *C. carinatum*; Myers in Turner, *Forage Plants Aust.* t. opp. 54 (1891), as *C. carinatum*.

*Vern.*: Clammy Goosefoot. *Distr.*: ACDEHJKLMNPQRSTVW—also W.A. S.A., N.S.W., A.C.T., Cent. Aust., N.Z.

—Perianth-segments each with a hooded wing or keel on the back; wing entire or slightly toothed at the flattened apex toward which it broadens, giving the segment a  $\pm$  triangular profile (rare plant of East Gippsland):

*C. carinatum* R. Br. *Prodr. Flor. Nov. Holl.* 407 (1810).

*Illust.*: Black, *Trans. roy. Soc. S. Aust.* 58: t. 10 fig. 9 (opp. 184) (1934).

*Vern.*: Keeled Goosefoot. *Distr.*: W (Snowy R.)—also ?W.A., N.S.W., Qd.

[In *Flor. Vict.* 453 (1931), Ewart admitted the var. *melanocarpum* J. M. Black in *Trans. roy. Soc. S. Aust.* 46: 566 (1922), presumed to be "a transitional form to

*C. cristatum*." This taxon was later raised to specific rank by J. M. Black l.c. 58: 173 (1934), but it is a plant of inland mountain ranges (Flinders, Musgrave, Everard etc.) and most unlikely to occur in Victoria—there are no Victorian specimens in Melbourne Herbarium.]

—Perianth-segments each with a *broad, vertical, laciniate wing* which is fringed or crested and bears an apical *awn-like beak* (fragrant desert plant, with flowers in congested, often close, shaggy whitish clusters):

*C. cristatum* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 7: 11 (1869).

*Blitum cristatum* F. Muell. in *Trans. phil. Inst. Vict.* 2: 73 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 349 (1948); also *Trans. roy. Soc. S. Aust.* 58: t. 10 (1934)—fl.; Mahood in Chippendale, *Poison. Plant. N. Terr.* Ext. Art. n. 2 part II: fig. 13 (1958); Graff in Mueller, *Icon. aust. salsol. Plants* t. 31 (1890); Leigh & Mulham, *Pastoral Plants Riverine Plain* 62 (1965).

*Vern.*: Crested Goosefoot. *Distr.*: AFG—also all mainland States, Cent. Aust.

[The European *C. rubrum* L. (Red Goosefoot) and *C. bonus-henricus* L. (Good King Henry) are given as "widely spread" naturalized plants in Ewart's *Flor. Vict.* 451 & 452 resp. (1931). However, the only Victorian specimens at Melbourne Herbarium (from North Melbourne and Coode Island), purporting to be *C. rubrum*, are referable to the closely related and indigenous *C. glaucum* L., while there is only one voucher specimen (viz. Foster) for the record of *C. bonus-henricus*. Both might well be spontaneous (and perhaps overlooked) in the State; but, pending the collection of undoubted material, these names were better deleted from a Victorian flora. *C. rubrum* is usually a reddish and nearly (or quite) glabrous annual plant, extremely variable in habit and leaf-shape; it resembles *C. glaucum* in having only 2-4 floral segments and 2-3 stamens, but the under-surfaces of its leaves are *not* mealy-white. *C. bonus-henricus* is perennial (1-2 ft. high) with large, broadly hastate, almost glabrous leaves to 4" long, leafless pyramidal inflorescences, long-exserted stigmas and large red-brown seeds (about 2 mm. in diameter).

Also in the tribe *Chenopodieæ* is the monotypic genus *Cycloloma* Moq. (1840), indigenous to the Great Plains region of the United States. The single species, *C. atriplicifolium* (Spreng.) Coult., is an annual herb, somewhat woolly when very young and remarkable for the *broad horizontal wing* surrounding its perianth (both in young and mature phases), mimicking the familiar fruiting structure of many *Kochia* species. The few leaves (1-2" long) are coarsely toothed and rather evanescent, the stem is repeatedly branched forming an intricate bush up to 2 ft. high and wide, while the whole plant (including winged perianths) often has a deep reddish-purple pigmentation as in beetroot. *Cycloloma atriplicifolium* appeared recently at Walpeup in the Victorian Mallee (Apr. 1955), also in the Ouyen district (Dec. 1959), but it is not yet known to be spreading or even established there.]

## Tribe ATRIPLICEÆ

### ATRIPLEX L. (1753)

1. Fruiting bracteoles compressed *laterally*, united *almost to summit*, forming an ellipsoid or obovoid,  $\pm$  scaly fruiting structure 2-4 mm. long; fruit and seed *horizontal* or transverse to the fruiting bracteoles

(small-leaved, succulent, prostrate, coastal herb, *glistening with watery papillæ* as in members of *Aizoaceæ*):

**A. billardieri** (Moq.) Hook. f. *Flor. N.-Z.* 1: 215 (1853).

*Obione billardieri* Moq. *Chenopod. Monogr. enum.* 72 (1840).

*Illust.*: Graff in Mueller, *Icon. aust. salsol. Plants* t. 2 (1889), as *A. crystallinum*; Aellen, *Bot. Jb.* 68: 355 fig. A (1938), as *Theleophyton billardieri*; Fitch in Hooker f., *Flor. Tasm.* 1: t. 95 fig. A, col. (1857).

*Vern.*: Glistening Saltbush. *Distr.*: EKPZ—also Tas.

[In *Bot. Jb.* 68: 348 (1938) P. Aellen restores this unique species to Moquin's monotypic genus *Theleophyton* (1849), in a distinct new subtribe *Theleophytinae*—a view not yet shared by the majority of Australian systematists. Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 114 (1965), adopts the name *T. billardieri* (Moq.) Moq.]

—Fruiting bracteoles compressed *dorsally*; seed *vertical* (plants *without* glistening papillæ) 2

2. Fruiting bracteoles united *almost to summit* (but sometimes with horizontal apical flaps), *spongy-fibrous throughout* (monœcious annuals with broad ovate-rhomboid leaves) 18

Fruiting bracteoles united *to the middle* or slightly higher, *not* spongy throughout 10

Fruiting bracteoles united *only near base*, *never* spongy at all 3

3. Shrubby perennials, usually *diœcious*; leaves with a *silver-grey scaly indumentum* on both surfaces; fruiting bracteoles 5-15 mm. long 6
- Herbaceous *monœcious* annuals; leaves *green* (sometimes purplish), at least the upper surfaces *without mealy scales* 4

4. Stems 3-5 ft. high; leaves *thin*, broadly triangular,  $\pm$  hastate; fruiting bracteoles 5-10 mm. long, quite *free*, *oval*, entire, very *thin*, *smooth* but *net-veined* (female flowers are dimorphic, some having horizontal fruit half enclosed by a regular 5-lobed perianth):

\***A. hortensis** L. *Spec. Plant.* 2: 1053 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 2: fig. 1501 (1944); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 855 (1931); Hegi, *Ill. Flor. Mittel-Eur.* 3: fig. 550 h-n, 551 (1909); Reichenbach, *Icon. Flor. germ.* 24: t. 260, col. (1908); Coste, *Flor. Franc.* 3: fig. 3076 (1904); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2349, col. (1927).

*Vern.*: Garden Orache. *Distr.*: CN—also N.S.W.

—Stems seldom 3 ft. high (often procumbent); leaves *thickish*; fruiting bracteoles  $\pm$  5 mm. long, *united* near base or almost to middle, *triangular to rhomboid*, *thick*, obscurely veined,  $\pm$  *scaly* or *warty* on the back 5

5. Leaf-blades *lanceolate*, *tapering* below into a short petiole; fruiting bracteoles *rhomboidal*:

\***A. patula** L. *Spec. Plant.* 2: 1053 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 25: t. 26 (1968); Abrams, *Ill. Flor*

*Pacific States* 2: fig. 1504 (1944); Aellen, *Bot. Jb.* 68: 393 fig. c (1938); Strudwick, *Further Ill. Brit. Plant.* fig. 304 (1930); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 96 fig. 2, col. (1909); Javorka & Csapody, *Icon. Flor. hungar.* 127 (1930); Georgia, *Manual Weeds* fig. 70 (1919); Reichenbach, *Icon. Flor. germ.* 24: t. 265, col. (1908); Coste, *Flor. Franc.* 3: fig. 3079 (1904); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2350, col. (1927).  
*Vern.*: Common Orache. *Distr.*: CJKNPTW—also all States of Australia, N.Z.

—Leaf-blades *ovate to deltoid, truncate* or  $\pm$  *hastate* at base and *contracting abruptly* into the petiole (1 cm. long or more); fruiting bracteoles triangular, truncate or even cordate at base:

\**A. hastata* L. *Spec. Plant.* 2: 1053 (1753).

*A. patula* L. var. *hastata* (L.) A. Gray *Manual Bot. nth. U.S.* ed. 5: 409 (1867).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 25: t. 25 (1968); Abrams, *Ill. Flor. Pacific States* 2: fig. 1505 (1944); Hyde in Robbins, Bellue & Ball, *Weeds Calif.* fig. 69 b & f (1941); Strudwick, *Further Ill. Brit. Plant.* fig. 305 (1930); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2351, col. (1927); Georgia, *Manual Weeds* fig. 71 (1919), as *A. patula* var. *hastata*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 96 fig. 3, col. (1909); Reichenbach, *Icon. Flor. germ.* 24: t. 261, col. (1908); Coste, *Flor. Franc.* 3: fig. 3077 (1904); Burbidge, *Flor. Aust. Cap. Terr.* fig. 140 (1970).

*Vern.*: Hastate Orache. *Distr.*: AEPW—also S.A., N.S.W., A.C.T., N.Z.

6. Fruitling bracteoles *reniform, entire*, without appendages, 6 mm. long  $\times$  10 mm. broad, on a very *slender pedicel* 4-10 mm. long; leaves obovate to narrowly oblong, concave above (rare inland plant):

*A. stipitata* Benth. *Flor. aust.* 5: 168 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 361 (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 56 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 13 (1889); Ulbrich, *Natürl. Pflfam.* ed. 2, 16c: fig. 194 E (1934); Aellen, *Bot. Jb.* 68: 377 fig. E (1938).

*Vern.*: Kidney Saltbush. *Distr.*: AGN—also all mainland States.

—Fruiting bracteoles either not reniform or not slenderly stipitate, usually *sessile* or almost so 7

7. Fruitling bracteoles with *spongy dorsal appendages* 9

Fruiting bracteoles *without* appendages, but often swollen toward base 8

8. Leaves *orbicular* to broadly ovate; fruiting bracteoles very *obtuse, suborbicular* or  $\pm$  fan-shaped, often denticulate (stout inland shrub 3-6 ft. high):

*A. nummularia* Lindl. in Mitch. *J. Exped. trop. Aust.* 64 (1848).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 48 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 359 (1948); Ewart, *Flor. Vict.* fig. 185 A (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 57 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 16 (1889); Graff in Audas, *J. Dep. Agric. Vict.* 15: 501 (1917); Adcock, *ibid.* 3: t. opp. 118 (1905); White in Bailey, *Compr. Cat. Qd Plan*



fig. 387 (1913); Aellen, *Bot. Jb.* 68: 377 fig. G 1-6 (1938); Wills in Maiden, *Agric. Gaz. N.S.W.* 5: t. opp. 209 (1894).

*Vern.*: Old-man Saltbush. *Distr.*: AR—also most inland parts of mainland Australia.

[P. Aellen in *Bot. Jb.* 68: 379 (1938) distinguishes, as subspecies *omissa*, a population having rather pointed, oval to rhombic fruiting bracteoles; it occurs in Victoria along the Murray River at Mildura and in Kulkyne National Forest.]

—Leaves *lanceolate* or oblong; fruiting bracteoles *acute* to acuminate, *ovate-triangular*, sometimes  $\pm$  cordate at base (*slender*, typically coastal shrub seldom exceeding 3 ft.):

*A. paludosa* R. Br. *Prodr. Flor. Nov. Holl.* 406 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 360 (1948); Ewart, *Flor. Vict.* fig. 185 B (1931); Graff in Mueller, *Icon. aust. salsol. Plants* t. 14 (1889); Aellen, *Bot. Jb.* 68: 393 fig. H 1-8 (1938).

*Vern.*: Marsh Saltbush. *Distr.*: ENPT—also W.A., S.A., Tas.

[The var. *cordata* Benth. *Flor. aust.* 5: 170 (1870) occurs in inland areas and differs from the typical form in its manifestly *pedicellate*, *cordate* and almost entire fruiting bracteoles. It is known in Victoria from Lake Tyrrell (May 1918), extending to St. Vincent Gulf, S.A.]

—As for the last, but fruiting bracteoles *obtusish*, very firm and *corky* or *hardened* below (*robust*, silver-grey coastal shrub  $\pm$  3 ft. high):

*A. cinerea* Poir. in *Encycl. méth. Bot.* 9: 471 (1810).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 41 (1967); Lee, *Wild Life* 9: 101 (1947); Black, *Flor. S. Aust.* ed. 2: fig. 366 (1948); Ewart, *Flor. Vict.* fig. 187 (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 58 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 15 (1889); Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 195 L-R (1934), as *Neopreissia cinerea*; Aellen, *Bot. Jb.* 68: 393 fig. G 1-3, G 6-10 (1938).

*Vern.*: Coast or Grey Saltbush. *Distr.*: ENPTW—also all States.

9. Leaves greyish, *lanceolate* or narrowly oblong, usually 1-2" long; fruiting bracteoles *triangular* to rhomboid, with hard thick base (*robust* coastal shrub about 3 ft. high):

*A. cinerea* Poir. [See preceding species]

—Leaves almost white, *orbicular* to broadly oblong, <1" long; fruiting bracteoles *suborbicular*, reticulate, without a hardened base, sometimes *almost concealed* by the large spongy dorsal appendages (*erect* Mallee shrub <2 ft. high):

*A. vesicaria* Heward ex Benth. *Flor. aust.* 5: 172 (1870).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 51 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 364 (1948), as *A. hymenotheca*; Ewart, *Flor. Vict.* fig. 188 (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 60 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 17 (1889); *l.c.* t. 18 (1889); Ulbrich,

*Natürl. PflFam.* ed. 2, 16c: fig. 194 D (1934); Aellen, *Bot. Jb.* 68: 393 fig. E (1938), as *A. hymenotheca*.

*Vern.*: Bladder Saltbush. *Distr.*: AG—also all mainland States, Cent. Aust.

[This taxon is not, as treated by Aellen (1938), conspecific with the earlier described *A. hymenotheca* Moq. (1849) of West. Aust.]

10. Fruiting bracteoles tubular at base and usually  $\pm$  stalked, bearing 1 or more obvious dorsal appendages (mostly uncommon plants of the far north-west) 15  
 Fruiting bracteoles sessile at base or almost so, usually without appendages 11
11. Fruiting bracteoles 3-6 mm. long, narrow and  $\pm$  cylindrical throughout or pitcher-shaped, hardened and united for about three-quarters of their length (procumbent Mallee plant with oblong to linear-lanceolate leaves about 1" long):

*A. leptocarpa* F. Muell. in *Trans. phil. Inst. Vict.* 2: 74 (1858).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 46 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 382 (1948); Ewart, *Flor. Vict.* fig. 191 (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 64 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 3 (1889); Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 194 H 1-2 (1934); Aellen, *Bot. Jb.* 68: 355 fig. F 1-3 (1938); Shinn, *Bull. Calif. agric. Exp. Sta.* 125: 16 fig. 3, 19 t. 6 (1899).

*Vern.*: Slender-fruit Saltbush. *Distr.*: ABCH—also S.A., N.S.W., Qd.

[The var. *armata* Aellen in *Bot. Jb.* 68: 362 (1938) differs in its smaller, relatively broader leaves ( $\pm$  1 cm. long) and shorter fruiting bracteoles (2-4 mm.) which have 2 conspicuous swellings or hollow lateral tubercles toward base of tube. It is apparently known only from the Murray Mallee—at Red Cliffs, Vic. (Feb. 1950), and near Berri & Blanche Town, S.A. Another variant, or perhaps hybrid, at Midura (June 1935) had irregularly toothed leaves and up to 6 appendages girdling the middle of the bracteolar tube.]

—Fruiting bracteoles not entirely cylindrical, never united beyond  $\frac{1}{3}$  of their length 12

12. Fruiting bracteoles  $\pm$  rhomboid, hard and swollen from base to above the middle, entire (very rare silvery-white shrub, 2-3 ft. high; leaves ovate to  $\pm$  triangular, often hastate):

*A. rhagodioides* F. Muell. in *Trans. phil. Inst. Vict.* 2: 74 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 370 (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 59 (1891); Aellen, *Bot. Jb.* 68: 393 fig. G 4-5 (1938), as *A. cinerea* subsp. *rhagodioides*.

*Vern.*: Silver Saltbush. *Distr.*: A ("Murray Desert")—also W.A., S.A., N.S.W.

[P. Aellen in *Bot. Jb.* 68: 398 (1938) reduced this taxon to a subspecies *rhagodioides* of *A. cinerea* Poir., but his opinion is not generally endorsed by Australian botanists.]

—Fruiting bracteoles not hardened, often  $\pm$  toothed on margins 13

13. Annual ascending herb to 2 ft high, usually with coarsely toothed and

apically rounded leaves 1-2" long; fruiting bracteoles numerous in dense axillary clusters, 2-4 mm. long, shortly *stipitate*, with large *deltoid apical lobe* and 2 or more irregular lateral teeth on each side, only the stipe-like base indurating in fruit.:

*A. suberecta* I. C. Verdoorn in *Bothalia* 6: 418, 419 fig. 2 (1954).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 374 (1948); Ewart, *Flor. Vict.* fig. 190 (1931), as *A. muelleri*.

*Vern.*: Saltbush. *Distr.*: AGLNP—also N.S.W., S.A., ?W.A., S. Afr.

—As for the last, but leaves usually *truncate* at apex, and the rounded fruiting bracteoles *non-stipitate*, the latter with an *apical crest* of short, toothed lobes and *indurating as a whole*:

*A. muelleri* Benth. *Flor. aust.* 5: 175 (1870).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 47 (1965); Graff in Mueller, *Icon. aust. salsol. Plants* t. 7 (1889); Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 194 A (1934).

*Vern.*: Mueller Saltbush. *Distr.*: ?A—also N.S.W., Qd, S.A., Cent. Aust.

[Owing to past confusion with the preceding species, *A. suberecta*, it is not yet clear whether *A. muelleri* (sens. strict.) occurs in Victoria at all. Certainly most material reaching Melbourne Herbarium can be more readily referred to *A. suberecta*; but future research may indicate that separation of the latter, as a distinct species, is not warranted.]

—Perennials, often prostrate; fruiting bracteoles rather few, in small clusters, often *entire*.

14. Leaves *greenish above*, mealy beneath, 1-2 cm. long, often toothed; fruiting bracteoles 4-6 mm. long, subrhomboid, *glabrous*, becoming red and  $\pm$  *succulent* at maturity (widespread plant):

*A. semibaccata* R. Br. *Prodr. Flor. Nov. Holl.* 406 (1810).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 49 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 372 (1948); Ewart, *Flor. Vict.* fig. 189 (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 62 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 8 (1889); Aellen, *Bot. Jb.* 68: 421 fig. c (1938); Adcock, *J. Dep. Agric. Vict.* 3: t. opp. 120 (1905); Hyde in Robbins, Bellue & Ball, *Weeds Calif.* fig. 69 a & c (1941).

*Vern.*: Berry Saltbush. *Distr.*: ABCGKMNP—also all States of mainland Australia.

—Leaves *grey-tomentose all over*, <1 cm. long (often <5 mm.); fruiting bracteoles *minute* (<3 mm. long), almost *entire*, broadly rhomboid very *scaly*, never *succulent* (uncommon prostrate Mallee plant):

*A. prostrata* R. Br. *Prodr. Flor. Nov. Holl.* 406 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 373 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 10 (1889); Aellen, *Bot. Jb.* 68: 355 fig. M (1938).

*Vern.*: Mat Saltbush. *Distr.*: ABC—also W.A., S.A., N S W

—As for the last, but plant  $\pm$  *erect* and the *trilobate* fruiting bracteole (3-5 mm. long and broad)  $\pm$  *anchor- or aeroplane-shaped*:

*A. pseudocampanulata* Aellen in *Bot. Jb.* 68: 365, 355 fig. J (1938).

*Illust.*: Aellen (*l.c.*).

*Vern.*: Saltbush. *Distr.*: ABL—also S.A., Cent. Aust.

[A Mildura collection (1928), with 2 finger-like appendages at summit of tube, most probably represents a natural hybrid—probably with *A. eardleyæ* Aellen; it was described as *A. pseudocampanulata* var. *appendiculata* by Aellen in *Bot. Jb.* 68: 366 (1938).]

15. Leaves *lanceolate or linear, concave, entire*, densely mealy-papillose, often *fasciculate* on the slender, prostrate yellowish branches; fruiting bracteoles 2-5 mm. long, irregularly 3-dentate or fan-shaped, with a *star-like cluster* of relatively large soft *papillate appendages* around the base (salt-pans of far N.W. Mallee, where apparently endemic):

*A. papillata* J. H. Willis in *Vict. Nat.* 73: 152 (1957).

*Vern.*: Saltbush. *Distr.*: A.

—Leaves broad, *oval to  $\pm$  orbicular, flat*, often sinuate-toothed, *never fasciculate*; fruiting bracteoles with only 1 or 2 appendages, *never a star-like cluster* 16

16. Fruitng bracteoles *ovate, acute*, rigidly erect, 4-8 mm. long, with 3 (rarely 5) shallow lobes; tubular part *hard, swollen*, with 2 small tooth-like appendages at summit (intricately and stiffly branched plant 1-2 ft. high, in Mallee N. & W. from Nowingi):

*A. acutibractea* R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 55: 500, t. 18 fig. 5 (1930).

*Illust.*: Anderson (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 380 (1948); Aellen, *Bot. Jb.* 68: 421 fig. B (1938).

*Vern.*: Saltbush. *Distr.*: A—also S.A.

—Fruiting bracteoles dilated, *broadly truncate* or fan-shaped above, shallowly 3- to 5-toothed; tubular part *not swollen*,  $\pm$  *pedicellate* (procumbent or ascending plants usually <1 ft. high) 17

17. Appendages *longer than the equal limbs* of fruiting bracteoles, dilated, spreading, toothed, and green-reticulate; fruiting bracteole-tube tomentose, cylindric, comparatively *very large* (5-8 mm.):

*A. limbata* Benth. *Flor. aust.* 5: 178 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 379 (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 65 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 4 (1889); Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 194 J (1934); Aellen, *Bot. Jb.* 68: 355 fig. D (1938).

*Vern.*: Spreading Saltbush. *Distr.*: A—also S.A., N.S.W., Qd, Cent. Aust.

—Appendages *shorter than* the green-reticulate limbs of fruiting bracteoles,

often small and tooth-like; posterior-limb manifestly *longer and larger than* the anterior, the whole  $\pm$  *campanulate*; fruiting bracteole-tube  $\pm$  2 mm. long, *very slender* at base:

*A. eardleyæ* Aellen in *Candollea* 12: 153 (1949).

*A. campanulata* Benth. *Flor. aust.* 5: 177 (1870), *non* J. Woods (1850).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 378 (1948); Aellen, *Bot. Jb.* 68: 355 fig. B (1938); Domin, *Bibl. bot., Stuttgart* 22 (Heft 89): t. 20 (1921)—all as *A. campanulata*.

*Vern.*: Saltbush. *Distr.*: ABG—also N.S.W., S.A.

—Appendages *lacking*; limbs of fruiting bracteoles *equal, fan-shaped*, strongly reticulate, 5-9 mm. long, and tube of fruiting bracteoles almost *glabrous*, narrow,  $\pm$  5 mm. long (leaves mealy, orbicular to rhomboid):

*A. angulata* Benth. *Flor. aust.* 5: 174 (1870).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 44 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 383 (1948)—fr.; Ewart, *Flor. Vict.* fig. 186 (1931)—fr.; Mueller, *Icon. aust. salsol. Plants* t. 11 (1889); Turner, *Forage Plants Aust* 61 (1891).

*Vern.*: Angular Saltbush. *Distr.*: F (Boundary Bend on Murray R., east of Bannerton—May 1955)—also all mainland States.

*Fr.* Fruiting bracteoles *obovoid* or *often almost globular*, 6-12 mm. in diameter, with neither limb nor appendages; radicle of embryo *superior*:

*A. spongiosa* F. Muell. in *Trans. phil. Inst. Vict.* 2: 74 (1858).

var. *holocarpa* (F. Muell.) J. M. Black *Flor. S. Aust.* ed. 2: 300 (1948).

*A. holocarpa* F. Muell. *Rep. Babbage Exped. S. Aust.* 19 (1859).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 50 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 387-88 (1948); Ewart, *Flor. Vict.* fig. 193 (1931); Myers in Turner, *Forage Plants Aust.* t. opp. 67 (1891), as *A. holocarpa*; Graff in Mueller, *Icon. aust. salsol. Plants* t. 20 (1889); Aellen, *Bot. Jb.* 68: 421 fig. N 1-4 (1938), as *Senniella spongiosa*; Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 194 c (1934); White in Bailey, *Compr. Cat. Qd Plants* fig. 388 (1913); Hayward & Druce, *Advent. Flor. Tweedside* 204-05 (1919).

*Vern.*: Pop Saltbush (Spongy Saltbush). *Distr.*: A—also all interior parts of mainland Australia.

[The typical form of *A. spongiosa*, having globular fruiting bracteoles only 3-5 mm. in diameter and a *non-woody* fruiting kernel, does not occur in Victoria; it ranges through Central and North Australia (type from Sturt's Ck.). HJ. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 113 (1965), has restored *A. holocarpa* to specific rank.]

—Fruiting bracteoles *flattened at summit*,  $\pm$  turbinate, about 10 mm. long and broad, with a reticulate,  $\pm$  undulate, spongy, *continuous horizontal wing* encircling the upper part (radicle of embryo *inferior*):

*A. inflata* F. Muell. in *Trans. phil. Inst. Vict.* 2: 75 (1858).

*A. halimoides* sens. Benth. *Flor. aust.* 5: 178 (1870), *non* Lindl. (1838) *nec* Rafin. (1818).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 45 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 385 (1948); Ulbrich, *Natürl. PflFam.* ed. 2, 16c: fig. 194 B 1-3 (1934), as *A. lindleyi*; Aellen, *Bot. Jb.* 68: 421 fig. J (1938), as *Blackiella inflata*; Graff in Mueller, *Icon. aust. salsol. Plants* t. 19 (1889), for the greater part, as *A. halimoides*; Shinn, *Bull. Calif. agric. Exp. Sta.* 125: 16 fig. 4, 18 t. 5 (1899), as *A. halimoides*.

*Vern.*: Flat-topped Saltbush. *Distr.*: AFGM—also N.S.W., S.A. and naturalized in Tunisia.

—As for the last, but fruiting bracteoles longer (to 15 mm.) and with 2 equal horizontally spreading, wing-like appendages (entire or denticulate) which arise toward base of the globular part of fruiting bracteoles:

*A. lindleyi* Moq. in DC. *Prodr.* 13<sup>2</sup>: 100 (1849).

*A. halimoides* Lindl. in Mitch. *Three Exped. E. Aust.* 1: 285 (1838), *non* Rafin. (1818).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 386 (1948); Ewart, *Flor. Vict.* fig. 192 (1931), as *A. halimoides*; Maiden, *Agric. Gaz. N.S.W.* 7: t. opp. 739 (1896), as *A. halimoides*; Myers in Turner, *Forage Plants Aust.* t. opp. 66 (1891), as *A. halimoides*; Aellen, *Bot. Jb.* 68: 421 fig. G 1-4 (1938), as *Blackiella conduplicata*.

*Vern.*: Baldoo (aborig.). *Distr.*: A—also W.A., S.A., N.S.W., Cent. Aust.

[P. Aellen in *Bot. Jb.* 68: 415-16 (1938) established a new subtribe *Spongio-carpinæ* and a monotypic genus *Senniella* for *Atriplex spongiosa*, simultaneously placing *A. lindleyi* and *A. inflata* in another new segregate genus *Blackiella* of the same subtribe (l.c. 423-26), as *B. conduplicata* (F. Muell.) Aellen and *B. inflata* (F. Muell.) Aellen respectively; but this generic splitting in such a highly polymorphic taxon as *Atriplex* has not found favour among Australian systematists.]

## Tribe CAMPHOROSMEÆ

BASSIA All. (1766)

1. Flowers 2-10 per axil; fruiting perianths connate in hard woolly masses 12  
Flower solitary in the leaf-axil; fruiting perianths isolated 2
2. Perianth remaining ± membranous in fruit, almost hidden in dense wool, with 5 erect greenish appendages alternating with 5 lower, short, spreading spines or slender horns; seed horizontal (small white-woolly, ± procumbent semi-shrub <1 ft. high):

*B. sclerolænoides* (F. Muell.) F. Muell. *Syst. Cens. Aust. Plants.* 30 (1882).

*Echinopsilon sclerolænoides* F. Muell. in *Trans. phil. Inst. Vict.* 2: 75 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 389 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 82 (1891).

*Vern.*: Woolly-fruit Bassia. *Distr.*: AFG—also W.A., S.A., N.S.W., N. Terr., Cent. Aust.

—Perianth becoming much *hardened* (from the base) in fruit, *never concealed* by wool.

3. Summit of fruiting perianth *flattened*, bordered by a narrow wing-like disk which is either broken into spines or bears 5 equidistant short, sharp teeth, the whole <4 mm. wide

Summit of fruiting perianth *not* at all flattened and disk-like; subulate or needle-shaped spines present (rarely reduced to 2 humps)

4. Spines 5 (usually 3 long and separate + 2 short and often united toward base); tube of perianth 1-2.5 mm. long and broad, with *very oblique* basal areole, the limb very short (intricate shrub up to 3 ft. high; leaves linear, plane-convex,  $\pm$  glaucous):

*B. quinquecuspidis* (F. Muell.) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Anisacantha quinquecuspidis* F. Muell. in *Trans. Vict. Inst.* 134 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 238, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 406 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 76 (1891); Leigh & Mulham, *Pastoral Plants Riverine Plain* 59 (1965).

*Vern.*: Five-spined Bassia (Roly-poly). *Distr.*: ACFLNR—also S.A., N.S.W., Qd, Cent. Aust.

[The var. *villosa* (Benth. ut *Anisacantha muricata* var.) R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 341 (1923) differs from the typical, almost glabrous form in having *hirsute* (or even tomentose) leaves and branches; its range in Victoria is practically co-extensive with glabrous populations, and it is also widely distributed through the eastern States and Central Australia.]

—Spines 2 (rarely 1), <8 mm. long; plants *hairy*, sometimes  $\pm$  tomentose

—Spines 3 (sometimes 4), 5-15 mm. long, spreading horizontally or sometimes decurved; plants *glabrous*

5. Tube of fruiting perianth  $\pm$  4 mm. long, attached so obliquely on the branch as to lie  $\pm$  *parallel*, neither base *nor* areole expanded, the limb *depressed or recurved*; a fourth short spine or tubercle usually present; seed vertical:

*B. divaricata* (R. Br.) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Anisacantha divaricata* R. Br. *Prodr. Flor. Nov. Holl.* 410 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 144, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 396 (1948); Ewart, *Flor. Vict.* fig. 199 (1931); Leigh & Mulham, *Pastoral Plants Riverine Plain* 57 (1965).

*Vern.*: Tangled Bassia. *Distr.*: A (Murray flood plain W. from Mildura)—also all mainland States, Cent. Aust.

—Tube of fruiting perianth 2-3 mm. long, squat, attached to branch by a *broad flanged base* (with expanded areole), the limb short but *erect*;

very rarely an abbreviated fourth spine present; seed vertical to quite oblique:

**B. tricuspis** (F. Muell.) R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 335 (1923).

*Anisacantha tricuspis* F. Muell. in *Trans. Vict. Inst.* 133 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 145, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 399 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 77 (1891), as *B. divaricata*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 60, col. (1965).

*Vern.*: Three-spined Bassia. *Distr.*: AG—also S.A., N.S.W., Qd.

6. Spines *variable*, sometimes unequal, <4 mm. long; tube squat, usually almost as broad as long, the basal areole *deeply hollowed*; seed *horizontal* 8

Spines  $\pm$  *equal*, 4-8 mm. long; tube oblong, the basal areole only *slightly excavated*; seed *vertical* 7

7. Spines twisted away from each other, *not* in the same vertical plane; tube densely *white-tomentose*, the limb *very short* and hardly discernible:

**B. obliquicuspis** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 337, t. 34 fig. D-G (1923).

*Illust.*: Anderson (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 146, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 403 (1948).

*Vern.*: Oblique-spined Bassia. *Distr.*: A (Murray flood plain N. & W. of Kulkyn Forest) F—also W.A., S.A., Cent. Aust., N.S.W.

—Spines diverging in the same vertical plane, often reddish; tube slightly hairy, the limb *conspicuous* and erect (often  $\pm \frac{1}{2}$  the length of tube):

**B. patentispis** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 338, t. 34 fig. A-C (1923).

*Illust.*: Anderson (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 402 (1948); Ewart, *Flor. Vict.* fig. 198 (1931).

*Vern.*: Spear-fruit Bassia. *Distr.*: A (Murray flood plain W. from Mildura)—also W.A., S.A., N.S.W., Cent. Aust.

8. Stems, foliage and fruiting perianths all *densely grey- or whitish-tomentose*; leaves linear-terete, *not* imbricate; perianth at length *thick-walled*, about as long as broad (2-5 mm.), *not* prominently ribbed; 2 spines well developed,  $\pm$  equal, 1-3 mm. long (widespread plant of west and south):

**B. diacantha** (Nees) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Anisacantha diacantha* Nees in *Lehm. Plant. Preiss.* 1: 635 (1845).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 391 (1948), as *B. uniflora*; Ewart, *Flor. Vict.* fig. 197 A<sub>2</sub> (1931), as *B. uniflora*; Ising, *Trans. roy. Soc. S. Aust.* 84: 89 fig. 2 (1961); Graff in Mueller, *Icon. aust. salsol. Plants* t. 78 (1891); Myers in



Turner, *Forage Plants Aust.* t. opp. 82 (1891), as *Sclerolæna diacantha*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 56 (1965).

*Vern.*: Bassia. *Distr.*: ABCFGHJN—also W.A., S.A., N.S.W., Cent. Aust.

—As for the last, but leaves  $\pm$  *clavate, imbricate* and erect (in upper parts) and spines either *absent* or  $<0.5$  mm. long (perianth tubercle very prominent—rare plant of far north-west):

**B. uniflora** (R. Br.) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Sclerolæna uniflora* R. Br. *Prodr. Flor. Nov. Holl.* 410 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 391 (1948)—left-hand item; Ising, *Trans. roy. Soc. S. Aust.* 84: 89 fig. 1 (1961); Ewart, *Flor. Vict.* fig. 197 A<sub>1</sub> (1931).

*Vern.*: Bassia. *Distr.*: A (Cowangie, Mildura & Hattah Lakes Nat. Park)—also W.A., S.A., N.S.W.

—Stems, terete foliage and fruiting perianths only *slightly pubescent*; perianth *thin-walled*, longer (1.5–2.5 mm.) than broad, with prominent *vertical ribs*, finally produced into 2 very unequal appendages—the shorter one *acicular*, the other *inflated obtuse and laterally flattened* (forming an asymmetric hump), a third very small intervening spine sometimes present (very rare plant of far N.W. Mallee—on Meridian Road south of Benetook):

**B. caput-casuarii** J. H. Willis in *Vict. Nat.* 73: 153 (1957).

*Illust.*: Ising, *Trans. roy. Soc. S. Aust.* 84: 89 fig. 8 (1961).

*Vern.*: Bassia. *Distr.*: A—also S.A. (Yudnapinna Stn.).

9. Horizontal wing of fruiting perianth with very *short*,  $\pm$  *equal radiating teeth*; tube *glabrous* 11

Horizontal wing deeply divided into 5 or 6 *unequal divaricate spines*; tube  $\pm$  *hairy* 10

10. Leaves *distant*, deciduous, 3–6 mm. long, bearing a *few long hairs*; tube of fruiting perianth  $<2$  mm. long, with *scattered long hairs*, very slightly hollowed at base; spines *acicular* toward apices, a conspicuous ridge running from between the 2 shorter (united) spines to base of perianth (very slender plant of N.W. Mallee):

**B. parviflora** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 347, t. 36 fig. H-L (1923).

*Illust.*: Anderson (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 410 (1948).

*Vern.*: Small-flower Bassia. *Distr.*: AF—also all mainland States.

—Leaves *contiguous*, persistent, 8–15 mm. long, densely and *appressedly villose*; tube of fruiting perianth 2–4 mm. long, barrel-shaped, minutely pubescent toward middle, distinctly excavated at base, faintly 10-ribbed; spines manifestly *flattened* (rare,  $\pm$  robust plant of far N.W.—near Mildura & Benetook—and apparently endemic):

**B. ramsayæ** J. H. Willis in *Vict. Nat.* 73: 152 (1957).

*Illust.*: Ising, *Trans. roy. Soc. S. Aust.* 88: 70 fig. 22 (1964).

*Vern.*: Bassia. *Distr.*: A.

11. Leaves crowded, 8-15 mm. long, densely covered with long, soft, interweaving hairs; horizontal wing of fruiting perianth regularly 5-angled, each angle terminating in a small firm tooth and continuing as a sharp vertical ridge or narrow wing to the excavated base of tube:

*B. brachyptera* (F. Muell.) R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 351 (1923).

*Sclerochlamys brachyptera* F. Muell. in *Trans. phil. Inst. Vict.* 2: 76 (1858);

*Chenolea brachyptera* (F. Muell.) Ewart *Flor. Vict.* 459 (1931).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 421 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 59 (1890), as *Kochia brachyptera*; Myers in Turner, *Forage Plants Aust.* t. opp. 79 (1891), as *K. brachyptera*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 55 (1965).

*Vern.*: Hairy Bassia. *Distr.*: ACG—also S.A., N.S.W.

- Leaves scattered on the white-woolly branches, 3-10 mm. long, shortly tomentose; horizontal wing of fruiting perianth circular, with 12 short radiating teeth or spines and 12 corresponding vertical ribs on the short broad tube:

*B. stelligera* (F. Muell.) F. Muell. *Icon. aust. salsol. Plants* t. 68 (1891).

*Maireana stelligera* F. Muell. *Fragm. Phyt. Aust.* 1: 139 (1859);

*Chenolea stelligera* (F. Muell.) Ewart *Flor. Vict.* 459 (1931).

*Illust.*: Graff in Mueller (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 419 (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 80 (1891), as *Kochia stelligera*.

*Vern.*: Star-fruit Bassia (Starred Bluebush). *Distr.*: Scattered through saltbush formation of north-west Victoria, on arid plains and sandy river flats from near Jeparit to Red Cliffs, Mildura and Lake Wallawalla, but uncommon. AC—also S.A., N.S.W., Qd.

[At King's Billabong of the Murray R., near Red Cliffs, occurs a remarkable variant having smooth  $\pm$  pilular fruiting perianths that are entirely devoid of teeth or spines.]

12. Connate fruiting perianths 6-10 together in a hard, globular, densely white-woolly mass 8-15 mm. wide; spines 2-5 per perianth, up to 5 mm. long, shortly exserted beyond the wool:

*B. paradoxa* (R. Br.) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Sclerolæna paradoxa* R. Br. *Prodr. Flor. Nov. Holl.* 410 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 416 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 62 (1891); Myers in Turner, *Forage Plants Aust.* t. opp. 83 (1891), as *Sclerolæna paradoxa*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 58 (1965).

*Vern.*: Hard-head Bassia. *Distr.*: A (Murray flood plain N. & W. of Kulkynne Forest)—also W.A., S.A., N.S.W., N. Terr., Cent. Aust.

—Connate fruiting perianths 2-3, united at base and *widely divergent, shortly tomentose*; spines *absent* or 1-2 and very minute (very rare, at Mildura and Lake Walla-walla):

*DISSOCARPU*

*B. biflora* (R. Br.) F. Muell. *Syst. Cens. aust. Plants* 30 (1882).

*Sclerolæna biflora* R. Br. *Prodr. Flor. Nov. Holl.* 410 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 417 (1948); Ewart, *Flor. Vict.* fig. 196 (1931); Graff in Mueller, *Icon. aust. salsol. Plants* t. 61 (1891).

*Vern.*: Bassia. *Distr.*: A—also S.A., N.S.W., Qd (Nookatunga), Cent. Aust.

[The var. *cephalocarpa* (F. Muell., ut *Sclerolæna biflora* var.) R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 48: 349 (1923) differs from the typical 2-flowered condition in having 3 (or even more) flowers per head. It has been recorded for the western interior of New South Wales, and occurs around Lake Walla-walla in the extreme north-west of Victoria (Aug. 1948).

*B. hyssopifolia* (Pall.) Kuntze is an annual, indigenous to eastern Europe and large tracts of Asia. It appeared recently (Apr. 1958 & Mar. 1959) in the Mildura district, Vic., and is also said to be spreading rapidly over alkaline ground in the States of Washington, California and Nevada, U.S.A. This plant (referred by some authors to a distinct genus, *Echinopsilon* Moq.) has whitish stems, flat linear leaves, hairy flowers in dense decompound spikes and a fruiting perianth with 3-5 equal slender *hooked spines* 1-2 mm long. A fruiting branchlet is illustrated in *Flor. U.R.S.S.* 6: t. 5 opp. 98 fig. 13 (1936), and another illustration appears in Hegi, *Ill. Flor. Mittel-Eur.* ed. 2, 3<sup>1</sup>: 712 fig. 312 a (1961).

E. Ulbrich in *Natürl. PflFam.* ed. 2, 16c: 532-33 (1934) reinstated F. Mueller's old genus *Dissocarpus* (1858) for *B. paradoxa* and *B. biflora*, and simultaneously limited the concept of *Bassia* to 10 species with *membranous* fruiting perianths (all being Eurasian). The other Australian species, hitherto assigned to *Bassia*, he apportioned between *Sclerolæna* R. Br. (syn. *Anisacantha* R. Br.) and his own new genus *Austrobassia* (which embraces those plants having small, flat-topped fruiting perianths with short spiny teeth and usually horizontal seeds). However, both *Sclerolæna* and *Austrobassia* are still heterogeneous assemblages, and little is gained by attempting to define them. J. M. Black in *Flor. S. Aust.* ed. 2: 301-08 (1948) did not accept Ulbrich's generic re-shuffle of the Australian *Bassia* and this opinion is maintained in the present *Handbook*. A review of all Australian species (with key, and descriptions of 24 new species) by E. H. Ising was published in *Trans. roy. Soc. S. Aust.* 88: 63-110 (1964).]

#### MALACOCERA R. H. Anderson (1926)

*M. tricornis* (Benth.) R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 51: 382 (1926).

*Chenolea tricornis* Benth. *Flor. aust.* 5: 191 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 422 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 63 (1891), as *Bassia tricornis*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 71 (1965).

*Vern.*: Goat-head (Soft-horns). *Distr.*: A (rare, on Murray flood plain W. from Mildura)—also W.A., S.A., N.S.W.

*MAIREANA*

—*KOCHIA* Roth in Schrad. (1801)—

1. Fruiting perianth 4-6 mm. wide, *wingless*, the 5 lobes becoming *thickened*

into rounded auricles which close over the fruit; tube prominently 5-ribbed (dwarf, prostrate perennial with linear-lanceolate, slightly villous leaves 6-15 mm. long):

*ii. ENCHYLÆNGIDES*

**K. crassiloba** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 51: 383, t. 26 (1926).

*Enchylæna villosa* F. Muell. in *Trans. phil. Inst. Vict.* 2: 76 (1858),  
non *Kochia villosa* Lindl. (1848);

*Chenolea villosa* (F. Muell.) Ewart *Flor. Vict.* 458 (1931).

*Illust.*: Anderson (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 440 (1948).

*Vern.*: Wingless Bluebush. *Distr.*: BCHJMN—also S.A., N.S.W

[Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 126 (1965), supports the assignment of this species to a distinct monotypic genus, as *Duralia villosa* (F. Muell.) E. Ulbrich in *Natürl. PflFam.* ed. 2, 16c: 537 (1934).]

—Fruiting perianth with horizontal wings *united into a single wing* (which may be divided by one slit or sometimes slightly lobed) 4

—Fruiting perianth with 5 distinct horizontal wings which are *free from the base upwards* (erect semi-shrubs, except for the very rare *K. cheelii*) 2

2. Leaves *opposite, hoary*, divergent, 2-4 mm. long; perianth-wings *unequal*, the 2 smaller ones spreading and 3 larger somewhat deflexed (far N.W. Mallee):

**K. oppositifolia** F. Muell. in *Trans. Vict. Inst.* 134 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 427 c (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 42 (1890).

*Vern.*: Heathy Bluebush. *Distr.*: AB—also W.A., S.A., N.S.W.

—Leaves *alternate, green, glabrous*; 5 perianth-wings *equal* (each  $\pm$  2 mm. long) 3

3. Erect shrub 1-4 ft. high; leaves 2-4 mm. long; fruiting perianth *dark*, the tube *only slightly costate*; 5 perianth-wings *overlapping, not sharply contracted below*:

**K. brevifolia** R. Br. *Prodr. Flor. Nov. Holl.* 409 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 430 (1948); White in Bailey, *Compr. Cat. Qd Plants* fig. 389 (1913); Myers in Turner, *Forage Plants Aust.* t. opp. 70 (1891); Graff in Mueller, *Icon. aust. salsol. Plants* t. 43 (1890).

*Vern.*: Short-leaf Bluebush. *Distr.*: ABCGP—also most inland parts of mainland Australia.

—Procumbent herb (or semi-shrub) with  $\pm$  fleshy, *swollen tap-root* (tasting of coconut when fresh); leaves 5-10 mm. long; fruiting perianth *whitish*, often slightly pubescent, with *sharply 10-ribbed tube*; 5 perianth-wings  $\pm$  touching, but *not overlapping*, each *abruptly contracted* into a short claw and broadly spatulate or T-shaped (so that the whole fruiting structure fancifully resembles a *miniature chariot-wheel*, having 5 "spokes" with alternating circular perforations or interstices):

**K. cheelii** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 59: 270, 271 fig. 3-4 (1934).

*Illust.*: Anderson (*l.c.*)—fruit.

*Vern.*: Chariot Wheels. *Distr.*: M (very rare, noted near Kamarooka north of Bendigo in 1947)—also N.S.W.

4. Perianth-tube with 3-5 vertical wings (or sometimes narrow fins) in addition to the large horizontal wing; leaves glabrous 13  
Perianth-tube without vertical wings 5
5. Perianth-limb erect above the wing, 5 mm. high, pubescent, green but drying blackish (rigid shrub 3-6 ft. high, with the divaricate branches often  $\pm$  spinescent; leaves  $\pm$  obovoid, 2-4 mm. long):

**K. pyramidata** Benth. *Flor. aust.* 5: 186 (1870).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 138, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 427 B (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 49 (1890); Myers in Turner, *Forage Plants Aust.* t. opp. 71 (1891); J. Dep. Agric. *Vict.* 15: 502 (1917); Leigh & Mulham, *Pastoral Plants Riverine Plain* 68 (1965).

*Vern.*: Shrubby Bluebush (Curongur of Darling R. aborig.). *Distr.*: AG (Murray flood plain)—also W.A., S.A., N.S.W.

—Perianth-limb almost flat (plant seldom exceeding 3 ft.) 6

6. Fruiting perianth 3-5 mm. wide, very flat-based, densely woolly, regularly 5-angled and encircled by a very narrow hyaline pentagonal wing (small trailing,  $\pm$  silky-tomentose perennial with fleshy tap-root):

**K. pentagona** R. H. Anderson in *Proc. Linn. Soc. N.S.W.* 51: 385, t. 27 (1926).  
*Chenolea pentagona* (R. H. Anderson) Ewart *Flor. Vict.* 458 (1931).

*Illust.*: Anderson (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 439 (1948); Leigh & Mulham, *Pastoral Plants Riverine Plain* 67, col. (1965).

*Vern.*: Slender Bluebush. *Distr.*: ABCGM—also S.A., N.S.W.

—Fruiting perianth 5-12 mm. wide, the herbaceous tube (3-4 mm. long) constricted at about the middle and then expanded into a broad, hollow, somewhat lobed base (procumbent silky-villous perennial with  $\pm$  swollen tap-root):

**K. excavata** J. M. Black in *Trans. roy. Soc. S. Aust.* 47: 368 (1923).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 441 (1948); Leigh & Mulham, *Pastoral Plants Riverine Plain* 67, col. (1965).

*Vern.*: Bottle Bluebush. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

[The var. *trichoptera* J. M. Black (*l.c.*) differs from the typical form in its longer branches, flowers in long dense terminal spikes (almost concealing the floral leaves) and smaller fruiting perianth (5-10 mm. wide) with white-tomentose wing; in Victoria it has been noted in the Red Cliffs and Piangil districts, being widespread through inland New South Wales and South Australia.]

Fruiting perianth neither densely villous and pentagonal nor herbaceous and with hollowed base, hard or  $\pm$  crustaceous 7

7. Leaves stout  $\pm$  *clavate*, densely arranged, with very short *silvery-white* or bluish indumentum; fruiting perianth 8-10 mm. wide, with short, ribless, turbinate,  $\pm$  tomentose tube (dense bushy shrub 2-3 ft. high):

*K. sedifolia* F. Muell. in *Trans. Vict. Inst.* 134 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 433 (1948); Schoenfeld in Ewart, *Plants indig. Vict.* t. 84 opp. 21 (1910); Graff in Mueller, *Icon. aust. salsol. Plants* t. 54 (1890); Myers in Turner, *Forage Plants Aust.* t. opp. 75 (1891); Leigh & Mulham, *Pastoral Plants Riverine Plain* 69 (1965).

*Vern.*: Hoary Bluebush. *Distr.*: AB—also all mainland States, Cent. Aust.

—Leaves *linear or terete*; tube of fruiting perianth never both ribless and woolly, usually glabrous 8

8. Leaves *glabrous* (except for an axillary wool-tuft), *terete*, spreading, to 6 mm. long; tube of fruiting perianth 1-2 mm. long, *hemispherical* and *inconspicuous*, dull, *ribless*, almost filled by fruit-cavity; wing glabrous,  $\pm$  8 mm. diam. (slender erect shrub of Mallee, Wimmera, northern & Keilor plains):

*K. villosa* Lindl. in Mitch. *J. Exped. trop. Aust.* 91 (1848)

var. *tenuifolia* F. Muell. ex Benth. *Flor. aust.* 5: 187 (1870).

*K. tomentosa* sens. Ewart *Flor. Vict.* 462 (1931), non F. Muell. (1859).

*Illust.*: Ewart, *Flor. Vict.* fig. 201 (1931), as *K. tomentosa*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 70, col. (1965), as *K. tomentosa* var.

*Vern.*: Common Bluebush. *Distr.*: ABCFGHNMN—also S.A., N.S.W., Qd.

[Differing from typical *K. villosa* (chiefly interior of the continent) in the glabrous mature branches and glabrous *terete* (not flattened) leaves. *K. villosa* var. *villosa* has not yet been found in Victoria; but there is a collection from the Murray Mallee, S.A., so the typical form may occur in bordering areas of our far N.W.]

—As for the last, but tube of fruiting perianth shortly *turbinate*, *10-costate* and wing 12-15 mm. diam. (rare plant, in Wimmera near Minyip & Gooroc N. of St. Arnaud, also Quambatook):

*K. rohrlachii* P. G. Wilson in Hj. Eichler *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 123 (1965).

*Vern.*: Bluebush. *Distr.*: GH—also S.A.

—Leaves *woolly or villous* 9

9. Procumbent perennial herb with *flat*, linear, acuminate, *villous* leaves 1.5-3 mm. wide; fruiting perianth with short, *flattened*, ribless tube (1-2 mm. long) and firm wing tomentose above:

*K. humillima* F. Muell. *Fragm. Phyt. Aust.* 9: 168 (1875).

*Illust.*: Graff in Mueller, *Icon. aust. salsol. Plants* t. 56 (1890).

*Vern.*: Bluebush. *Distr.*: AGM—also S.A. (?), N.S.W.

—Erect shrubs with  $\pm$  *terete* leaves; fruiting perianth with conspicuous *obconic tube* (2-5 mm. long) 10

10. Tube of fruiting perianth *ribless*, hard, shiny, 4-5 mm. long and 4-5 mm. wide beneath wing; wing *undulate*, lustrous brown, 15-20 mm. wide (stout shrub 1-2 ft.):

*K. sp.* [aff. *K. georgei* Diels in *Bot. Jb.* 35: 184 (1904)].

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 139, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 427 A (1948)—both as *K. georgei*.

*Vern.*: Satiny Bluebush. *Distr.*: A (Murray flood plain N. & W. of Kulkyne Forest)—also S.A., N.S.W., Qd, Cent. Aust.

—Tube of fruiting perianth 10- to 11-ribbed; wing flat, <13 mm. wide 11

11. Branchlets becoming leafless, tough and spinescent; fruiting perianth with tube  $\pm$  2.5 mm. long and wing 8-12 mm. diam. (divaricate shrub to 3 ft. high):

*K. aphylla* R. Br. *Prodr. Flor. Nov. Holl.* 409 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 434 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 55 (1890); Myers in Turner, *Forage Plants Aust.* t. opp. 77 (1891—; *Agric. Gaz. N.S.W.* 15: 219 (1904)—habit; Leigh & Mulham, *Pastoral Plants Riverine Plain* 66 (1965).

*Vern.*: Leafless Bluebush. *Distr.*: ACHJN—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Branchlets *never* spinescent; leaves  $\pm$  *appressed*, 2-4 mm. long (plants usually <1 ft. high) 12

12. Wing of fruiting perianth *indistinctly veined*, 8-12 mm. diam.; leaves *densely white-tomentose*, closely appressed:

*K. tomentosa* F. Muell. *Rep. Babb. Exped. S. Aust.* 20 (1859).

*K. appressa* Benth. *Flor. aust.* 5: 188 (1870).

*Illust.*: Myers in Turner, *Forage Plants Aust.* t. opp. 76 (1891).

*Vern.*: Bluebush. *Distr.*: AG—also S.A., N.S.W., Cent. Aust.

—Wing of fruiting perianth with prominent, *dark brown to black radiating* nerves, 5-7 mm. diam.: leaves *sparsely* woolly:

*K. radiata* P. G. Wilson in Hj. Eichler *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 124 (1965).

*Vern.*: Bluebush. *Distr.*: ABF (Murray flood plain & Raak)—also S.A.

13. Branchlets *glabrous*,  $\pm$  *glaucous*; tube of fruiting perianth *broadly turbinate*, laccate, *blackish and shining* when dry, the base thick and solid (very rare, near Mildura also Thurla):

*K. triptera* Benth. *Flor. aust.* 5: 185 (1870).

*Illust.*: Gauba, *Vict. Nat.* 65: 164 fig. 2 a (1948)—fruit; Graff in Mueller, *Icon. aust. salsol. Plants* t. 50 (1890)—whole plant only.

Three-winged Bluebush. *Distr.*: A—also W.A., S.A., N.S.W., Qd, Cent.

[E. Gauba in *Vict. Nat.* 66: 12-13 (1949) has shown *K. triptera* var. *pentaptera* J. M. Black, and its basionym *K. decaptera* F. Muell., to be founded on the withered corollas of some *Abutilon* species (Malvaceæ)!]

—Branchlets *white-tomentose*; fruiting perianth green to bright *rosy-crimson* when fresh, *dull and brownish* in the dried state 14

14. Tube of fruiting perianth *funnel-shaped*, only the upper half occupied by fruit-cavity, the 5 lobes *depressed* and  $\pm$  *glabrous*; vertical wings somewhat *ventricose*, *uniformly wide* between margin of horizontal wing and perianth-base (bushy undershrub to 2 ft. high):

*K. erioclada* (Benth.) E. Gauba in *Vict. Nat.* 65: 163, 164 fig. 26 (1948).

*K. triptera* Benth. var. *erioclada* Benth. *Flor. aust.* 5: 185 (1870).

*Illust.*: Gauba (l.c.)—fruit; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 137, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 427 D (1948), as *K. triptera* var. *erioclada*.

*Vern.*: Rosy Bluebush. *Distr.*: AFG—also W.A., S.A., N.S.W.

—Tube of fruiting perianth *obconic*, with fruit-cavity descending to at least  $\frac{2}{3}$  the total length and often almost to base, the 5 lobes conspicuously *domed* and densely *villous on margins*; vertical wings variable in form but usually well developed *only on lower half* of tube, sometimes reduced to narrow fin-like appendages (attenuated shrub 2-6 ft. high):

*K. pentatropis* Tate in *Trans. roy. Soc. S. Aust.* 7: 67 (1885).

*Illust.*: Gauba, *Vict. Nat.* 65: 164 fig. 2 c (1948), as *K. decipiens*.

*Vern.*: Bluebush. *Distr.*: ABF—also W.A., S.A., N.S.W.

[Ewart in *Flor. Vict.* 460 (1931) admits *K. ciliata* F. Muell. *Rep. Babb. Exped. S. Aust.* 20 (1859), with the remark “confined to N.W. Victoria and infrequent”; however, the only specimens so labelled in Melbourne Herbarium (from the Jeparit district, and junction of Loddon River with Murray) are both mis-determined examples of *K. pentagona* R. H. Anderson, and no genuine *K. ciliata* has been collected in the State this century. Both species have trailing silky-tomentose branches and small, flat fruiting perianths almost hidden by tangled hairs; but the wing in *K. ciliata* is quite *circular* and there is *no* raised pentagonal ring above it, as in *K. pentagona*.

*K. lanosa* Lindl. in *Mitch. J. Exped. trop. Aust.* 88 (1848) was collected by F. Mueller in Jan. 1854 on “loamy flats along the River Murray”, the exact locality (whether in Victoria or New South Wales) remaining unknown. Mueller certainly included this species in his *Key Syst. Vict. Plants I*: 183 (1888); but he also maintained therein a number of other species now definitely known to be *not* Victorian, although approaching the State’s borders. During the past century no other collection of *K. lanosa* appears to have been made south of the Murray. This villous shrub has a hairy, shallowly 5-lobed wing to the fruiting perianth from the summit of which rise 5 prominent, *scarious, narrow-linear appendages*.]

#### ENCHYLÆNA R. Br. (1810)

*E. tomentosa* R. Br. *Prodr. Flor. Nov. Holl.* 408 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 160, col.



(1968); Black, *Flor. S. Aust.* ed. 2: fig. 445 (1948); Ewart, *Flor. Vict.* fig. 206 (1931); Graff in Mueller, *Icon. aust. salsol. Plants* t. 85 (1891); Leigh & Mulham, *Pastoral Plants Riverine Plain* 65 (1965).

*Vern.*: Barrier or Ruby Saltbush. *Distr.*: ABCEGHLMNPTWZ—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

### THRELKELDIA R. Br. (1810)

Leaves 5-15 mm. long, usually mucronate; primary branches *ribbed*, 2-3 mm. wide; fruiting perianth 3-4 mm. long, often  $\pm$  *succulent* externally but hardened within, *obovoid-oblong* to broadly cylindric, *never* gibbous (coastal plant):

*T. diffusa* R. Br. *Prodr. Flor. Nov. Holl.* 410 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 446 (1948); Graff in Mueller, *Icon. aust. salsol. Plants* t. 86 (1891).

*Vern.*: Coast Bonefruit. *Distr.*: EKPT—also W.A., S.A., Tas., N.S.W.

Leaves 2-5 mm. long, *never* mucronate; primary branches *not ribbed*, yellowish, 1-1.5 mm. wide; fruiting perianth  $\pm$  1.5 mm. long, pale brownish or reddish and very hard throughout, broadly *pear-shaped* to subglobular, very oblique at apex, with a high, obtuse and *hollowed hump* which continues as a keel to base of tube (inland Mallee plant):

*T. salsuginosa* (F. Muell.) Benth. *Flor. aust.* 5: 197 (1870).

*Osteocarpum salsuginosum* F. Muell. in *Trans. phil. Inst. Vict.* 2: 77 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 447 (1948); Schoenfeld in Ewart, *Plants indig. Vict.* t. 79 opp. 16 (1910), as *Osteocarpum salsuginosum*; Graff in Mueller, *Icon. aust. salsol. Plants* t. 88 (1891), as *O. salsuginosum*; Mueller, *Key Syst. Vict. Plants* 2: fig. 36 (1886), as *Chenolea salsuginosa*.

*Vern.*: Bonefruit. *Distr.*: AB—also S.A.

### BABBAGIA F. Muell. (1858)

*B. acroptera* F. Muell. & Tate in *Trans. roy. Soc. S. Aust.* 6: 108 (1883)  
var. *deminuta* J. M. Black in l.c. 46: 568 (1922).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 52 (1965).

*Vern.*: Babbagia. *Distr.*: ABG—also S.A., N.S.W.

[The typical form (extending from South Australia into western New South Wales and Queensland) has not yet been found in Victoria. It has fruiting perianths 5-6 mm. long (twice as large as those of var. *deminuta*), with *both wings* well developed and the larger wing 3-4 mm. long.]

### Tribe SALICORNIEÆ

#### *HALOSALINIA* -ARTHROCNEUM Moq. (1840)

1. Secondary branches *long and slender*,  $\pm$  catenulate, the joints *close*

together (5-10 per inch); fertile segments of fruiting spike 5-20; flowers in 3's, all bisexual; perianth *herbaceous, broadly 3-lobed*; pericarp ovoid, its hardened nipple-like point *protruding* well beyond the perianth (rare plant of Mallee salt lakes and salt-pans):

*A. lylei* (Ewart & J. White) J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 359, t. 34 (1919).

*Salicornia lylei* Ewart & J. White in *J. roy. Soc. N.S.W.* 42: 195, t. 34 (1908).

*Illust.*: Black (*l.c.*); Ewart & White (*l.c.*).

*Vern.*: Wiry Glasswort. *Distr.*: AG—also W.A.

—Secondary branches with  $\pm$  widely separated joints (<5 per. inch); perianth *fleshy or spongy, without lobes*; pericarp *not exerted* 2

2. Fertile segments 2-5 (rarely 6), almost globular, on a *very short spike* (<1 cm. long); flowers in 3's, the central one bisexual, the 2 *lateral male*; pericarp *horny*; seed-coat smooth (green coastal shrub to 4 ft. high, smaller in Mallee):

*A. arbusculum* (R. Br.) Moq. *Chenopod. Monogr. enum.* 113 (1840).

*Salicornia arbuscula* R. Br. *Prodr. Flor. Nov. Holl.* 411 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 452 (1948), as *A. arbuscula*; Black, *Trans. roy. Soc. S. Aust.* 43: t. 35 (1919).

*Vern.*: Shrubby Glasswort. *Distr.*: BCENP—also W.A., S.A., Tas., N.S.W., Qd, N. Terr.

—Fertile segments 6-40, *not* globular, on a spike >1 cm. long; *all 3 flowers bisexual* 3

3. Fruiting spike with relatively loose segments, the bracts *entire*; pericarp *hyaline, inconspicuous*; seed *pale brown to reddish, granular all over* or with *concentric fins*:

*A. halocnemoides* Nees in *Lehm. Plant. Preiss.* 1: 632 (1845).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 449 (1948); Black, *Trans. roy. Soc. S. Aust.* 43: t. 33 (1919); Lee, *Wild Life (Melb.)* 9: 100 (1947).

*Vern.*: Grey Glasswort. *Distr.*: ACFGNPTW—also W.A., S.A., Cent. Aust.

[The typical form, with seeds *half-granular* (on the back only), does not seem to occur in Victoria where it is replaced by the two varieties: *pergrannulatum* J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 359, t. 33 fig. 1-5 (1919), and *pterygospermum* J. M. Black *l.c.* 60: 166 (1936). The former variant has reddish-brown seeds that are densely and concentrically *granular all over*; it is widely distributed through inland saline tracts of the eastern States as well as on coastal salt-marshes, and is generally of lower stature than the typical W. Aust. & S. Aust. plant. The latter, occurring widely in N.W. Victoria between Swan Hill and the Raak-Ouyen region, is even more remarkable in having pallid seeds with longitudinally concentric, *soft overlapping fins* or flanges. Further investigation may warrant the recognition of var. *pterygospermum* as a distinct species.]

—Fruiting spike stout and rather *pallid*, with comparatively *very short*

*closely overlapping* segments, the bracts  $\pm$  *fimbriate*; pericarp *horny*, tapering toward apex; seed *whitish*, *entirely smooth*:

*A. leiostachyum* (Benth.) Paulsen in *Dansk. bot. Ark.* 2: 62 (1918).

*Salicornia leiostachya* Benth. *Flor. aust.* 5: 203 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 451 (1948); Black, *Trans. roy. Soc. S. Aust.* 43: t. 35 (1919).

*Vern.*: Brown-head Glasswort. *Distr.*: ACG—W.A., S.A., Cent. Aust., N. Terr.

### PACHYCORNIA Hook. f. (1880)

Bright green, spreading, cushion-like, extremely succulent shrub 1-2 ft. high; branches *stout* (3-6 mm. wide), the joint-lobes *acuminately pointed*; spikes *short*, dense and cone-like,  $\pm$  10 mm. wide; embryo *annular*:

*P. triandra* (F. Muell.) J. M. Black in *Flor. S. Aust.* 206, t. 18 (1924).

*Arthrocnemum triandrum* F. Muell. *Fragm. Phyt. Aust.* 1: 139 (1859).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 183, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 453 (1948); Schoenfeld in Ewart, *Plants indig. Vict.* t. 83 opp. 20 (1910), as *Salicornia robusta*; Mueller, *Key Syst. Vict. Plants* 2: fig. 38 (1886), as *S. robusta*.

*Vern.*: Desert Glasswort. *Distr.*: A (Murray flood plain)—also W.A., S.A., Cent. Aust.

Dull yellowish or grey-green dwarf shrub <1 ft. high; branches hard,  $\pm$  wiry, slender (<3 mm. wide), the short joint-lobes *acute or obtusish*; spikes *cylindrical to fusiform*, 2-4 mm. wide; embryo almost *straight*:

*P. tenuis* (Benth.) J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 363, t. 36 (1919).

*Salicornia tenuis* Benth. *Flor. aust.* 5: 204 (1870).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 454 (1948).

*Vern.*: Slender Glasswort. *Distr.*: A (Murray flood plain)—also S.A., Cent. Aust.

### SALICORNIA L. (1753)

Flowers usually in 7's (sometimes 5's or 3's in upper articles); fruiting spikes  $\pm$  3-4 mm. wide; seeds covered with *curved bristles* or  $\pm$  hooked hairs (slender, often etiolated, prostrate plant):

*S. quinqueflora* Bunge ex Ungern-Sternberg *Versuch System. Salicorn.* 59 (1866).

*S. australis* Soland. ex Benth. *Flor. aust.* 5: 205 (1870)—*nom. illeg.*

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 187, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 455 (1948), as *S. australis*; Black, *Trans. roy. Soc. S. Aust.* 43: t. 47 inter 366 & 367 (1919), as *S. australis*.

*Vern.*: Beaded Glasswort. *Distr.*: ACEGJKNPTWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

Flowers usually in 5's or 3's (rarely 7's in the lowermost articles); fruiting spikes 4-8 mm. wide; seeds concentrically *papillose* (rather compact,  $\pm$  robust plant):

*S. blackiana* Ulbrich in *Natürl. PflFam.* ed. 2, 16c: 552 (1934).

*S. pachystachya* J. M. Black in *Trans. roy. Soc. S. Aust.* 45: 8 (1921),  
non Bunge ex Ungern-Sternberg (1866).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 456 (1968); Lee, *Wild Life (Melb.)* 9: 102 (1947).

*Vern.*: Thick-head Glasswort. *Distr.*: CENPTW—also S.A.

### Tribe SUÆDEÆ

SUÆDA Forsk. (1775)

Styles 2, *well exerted*,  $\pm$  0.8 mm. long, coarsely papillose; fruiting perianth  $\pm$  1.5 mm. wide; seed *horizontal* (widespread undershrub of salt-marshes, usually 1-2 ft. high; leaves linear, pointed, 1-3 cm. long, light green or tinged with reddish-purple):

*S. australis* (R. Br.) Moq. in *Ann. Sci. nat. sér.* 1, 23: 318 (1831).

*Chenopodium australe* R. Br. *Prodr. Flor. Nov. Holl.* 407 (1810);

*S. maritima* sens. auctt. Aust., non certe (L.) Dumort., 1827.

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 195, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 444 (1948); Ewart, *Flor. Vict.* fig. 205 (1931), as *S. maritima*; Graff in Mueller, *Icon. aust. salsol. Plants* t. 89 (1891), as *S. maritima*.

*Vern.*: Austral Seablite. *Distr.*: ACEKNPTWZ—also W.A., S.A., Tas., N.S.W., Qd.

[*S. maritima* (L.) Dumort. is a widespread and highly variable species of the northern hemisphere. Even in Britain it may be erect or prostrate, glaucous or reddish-green, with leaves 3-10 mm. or as much as 25 mm. long, and seeds from 1 mm. to 2 mm. in diameter. Bentham in *Flor. aust.* 5: 206 (1870) merged the more shrubby, perennial Australian populations, *S. australis* (R. Br.) Moq., under *S. maritima* with the note: "I can, no more than J. D. Hooker, detect any other difference between the two." In this opinion he was supported by F. Mueller (1888), Rodway (1903), Maiden & Betche (1916) and Ewart (1931). C. A. Gardner (1930) and J. M. Black (1948) both reinstated *S. australis*, the latter authority in *Flor. S. Aust.* ed. 2: 316 remarking "very near the cosmopolitan *S. maritima*, but that is an annual species." Ulbrich in *Natürl. PflFam.* ed. 2, 16c: 558 (1934) upheld Domin's reduction of *S. australis* to varietal rank in *Bibl. bot., Stuttgart* 21 (Heft 89): 626 (1921), while Backer in *Flor. Malesiana* 4\*: 105 (1949) again treated it as synonymous with *S. maritima*. Until modern specialists can agree on the status of our Australian plant, it is thought proper to follow current procedure by referring it to *S. australis*.]

Styles 3, *hardly exerted*,  $\pm$  0.4 mm. long; fruiting perianth  $\pm$  2 mm. wide, seed *vertical* (low, widely spreading glaucescent semi-shrub):

*S. sp. BACCIFERA*

*Distr.*: N (S. Kensington, April 1967).

[The identity of this plant, possibly introduced, is still uncertain; it has some features in common with the Old World *S. fruticosa*, but its leaves are not noticeably rounded at the tips.

In May 1957 there appeared at Pyramid Hill a tall erect species of *Suaeda*, having 2 non-exserted styles ( $\pm 0.5$  mm. long), vertical seeds, and much inflated bladdery fruiting-perianths (2-3 mm. wide) tessellated with conspicuous blister-like surface cells to 0.2 mm. long. It is certainly not, as at first suspected, the *S. baccata* Forsk. recorded by J. M. Black (1948) from salt-marshes at Port Pirie, S. Aust.]

## Tribe SALSOLEÆ

### SALSOLA L. (1753)

*S. kali* L. *Spec. Plant.* 1: 222 (1753)—sp. agg.

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 443 (1948); Ewart, *Flor. Vict.* fig. 203 (1931); Graff in Mueller, *Icon. aust. salsol. Plants* t. 90 (1891); Mahood in Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2 part II: fig. 15 (1958); Paté in *Flor. Afr. Nord* 8: fig. 958 (1962).

*Vern.*: Prickly Salwort (Buckbush, Roly-poly). *Distr.*: ABCEFGHLMNPVWZ—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[In its wide sense, the name probably covers an aggregate of species, Australian populations of which were segregated and described as *S. australis* by R. Brown in *Prodr. Flor. Nov. Holl.* 411 (1810). Domin, in *Bibl. bot., Stuttgart* 21 (Heft 89): 628 (1921), took up Brown's name again; but this course has not been followed since by any other Australian botanist, and in *Flor. Malesiana* 4<sup>a</sup>: 106 (1949) Backer also synonymizes *S. australis* under *Salsola kali*. The var. *strobilifera* Benth. and subsp. *austroafricana* Aellen (1961) have been recorded for South Australia; but, in his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 126 (1965), H. J. Eichler remarks: "The South Australian specimens . . . belong to various species. A revision is badly needed. . . ."]

## Family AMARANTHACEÆ

1. Leaves *opposite*; flowers in short dense axillary spikes or clusters; stamens united at base, the anthers 1-locular

*Alternanthera* (p. 118)

Leaves *alternate*; anthers 2-locular

2

2. Perianth *glabrous*, <7 mm. long; stamens *free* *Amaranthus* (p. 112)  
Perianth *villous*, 7-20 mm. long; stamens *united* at base in a membranous cup (flowers in a dense terminal spike) *Ptilotus* (p. 115)

### AMARANTHUS L. (1753)

1. Floral bracts either none or short-pointed and hardly exceeding the perianths; fruit *indehiscent* or splitting irregularly (plants *glabrous* or almost so)

6

Floral bracts present, usually with prominent *long, sharp, rigid points*

almost as long as or longer than perianths; fruit *circumscissile* near middle zone (plants 1-5 ft. tall, sometimes  $\pm$  *pubescent*—at least on younger parts) 2

2. Flowers in *dense, terminal, often spike-like and leafless panicles*; perianth-segments 5, not acuminate 4  
Flowers in *small axillary clusters* <1 cm. long; perianth-segments 3; summit of fruit *rugulose* (plants glabrous or nearly so) 3
3. Bracts and bracteoles conspicuously *spinescent, twice the length* of female perianth; seed <1 mm. diam. (stems whitish, divaricate; leaves often minute on flowering branches):

\**A. albus* L. *Syst. Nat.* ed. 10: 1268 (1759).

*Illust.*: Maiden, *Agric. Gaz. N.S.W.* 19: 234, col. (1948); Coste, *Flor. Franc.* 3: fig. 3067 (1904); Paté in *Flor. Afr. Nord* 8: fig. 981 (1962); J. Dep. Agric. Vict. 13: 42 (1915)—habit.

*Vern.*: Stiff Tumbleweed. *Distr.*: ABCHLMR—also W.A., S.A., N.S.W., N.Z.

[Plants are variously red- or purple-tinted in the subvar. *rubicundus* Thell. in Aschers. & Graebn. *Syn. mitteleurop. Flor.* 5: 287 (1914), which is also present in Victoria.]

—Bracts and bracteoles *not* *spinescent, shorter than* female perianth; seed 1-1.5 mm. diam. (branch-leaves never minute).

\**A. græcizans* L. *Spec. Plant.* 2: 990 (1753).

*A. angustifolius* Lam. *Encyl. méth. Bot.* 1: 115 (1783)—*nom. illeg.*

*Illust.*: Aellen in Hegi, *Ill. Flor. Mittel-Eur.* ed. 2, 3<sup>a</sup>: 472 fig. 231 & 505 fig. 242 f, g, s, t (1959), as var. "*silvestris*".

*Vern.*: Amaranth. *Distr.*: M (Bendigo district, 1966)—also S.A.

[The Victorian (also South Australian) population is referable to subsp. *silvestris* (Vill., *ut sp.*) J. P. M. Brenan in *Watsonia* 4: 273 (1961), differing from typical subsp. *græcizans* in its relatively broader leaves (less than twice as long as wide) and non-indurate thinner apices to the perianth segments.]

4. Inflorescence *long-pendulous, bright red* or purplish, with dense elongated branches; fruit *red, smooth*; segments of female perianths obovate, *imbricate*:

\**A. caudatus* L. *Spec. Plant.* 2: 990 (1753).

*Illust.*: Bailey, *Manual Cult. Plants* 354 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 3: 262 (1909); Engler, *Natürl. PflFam.* III 1a: 103 (1893)—fl.; Paté in *Flor. Afr. Nord* 8: fig. 978 quarto (1962); Bailey, *Standard Cycl. Hort.* 1: 270 fig. 184 (1942).

*Vern.*: Love-lies-bleeding. *Distr.*: DG—also Qd.

—Inflorescence *upright* or  $\pm$  *spreading, greenish*; fruit pallid *green*; segments of female perianths *not* *imbricate* 5

5. Spikes *thick, simple* (<1" long) or more commonly *densely crowded* in a narrow stiff panicle; female flowers with  $\pm$  *spathulate, obtuse* to

even truncate segments; fruit *rugulose* above (plant usually densely pubescent, sometimes  $\pm$  villous above; root rosy-red):

\**A. retroflexus* L. *Spec. Plant.* 2: 991 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 464 (1948); Ewart, *Flor. Vict.* fig. 208 (1931); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 6 A (1951); Davey, *J. Dep. Agric. Vict.* new ser. 20: 230 (1922); Paté in *Flor. Afr. Nord* 8: fig. 980 (1962); Burbidge, *Flor. Aust. Cap. Terr.* fig. 141 (1970).

*Vern.*: Red-root Amaranth. *Distr.*: CJKNPRW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Spikes *elongated*, slenderly cylindric (1-4" long), in an ample and *open panicle*; female flowers with *lanceolate to ovate*, always  $\pm$  *acute* segments; fruit quite or nearly *smooth* (plant sparingly pubescent or almost glabrous):

\**A. hybridus* L. *Spec. Plant.* 2: 990 (1753).

*A. hypochondriacus* L. *l.c.* 991 (1753);

*A. paniculatus* L. *Spec. Plant.* ed. 2, 2: 1406 (1763).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 28, col. (1958); Muenscher, *Weeds* 216 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 3: 262 (1909), as *A. paniculatus*; Coste, *Flor. Franc.* 3: fig. 3064 (1904), as *A. paniculatus*.

*Vern.*: Spleen Amaranth. *Distr.*: KMNPW—also S.A., Tas., N.S.W., Qd, N.Z.

[In *Watsonia* 4: 269 (1961), J. P. M. Brenan identifies *A. paniculatus* L. with *A. hybridus* L. var. *cruentus* (L., *ut sp.*) R. Mansfeld in *Die Kulturpflanze* 2: 54 (1959); it differs from typical *A. hybridus* in having a *red* inflorescence and the longer bracteoles of female flowers *no longer than*  $1\frac{1}{2}$  times the length of perianth.]

6. Perianths 4-6 mm. long, 5-partite, chaffy, in *dense globular axillary clusters* much shorter than the ovate-lanceolate leaves (desert plant with transversely wrinkled fruits and black seeds 2 mm. long):

*A. grandiflorus* (J. M. Black) J. M. Black in *Trans. roy. Soc. S. Aust.* 60: 166, t. 16 fig. 4 (1936).

*A. mitchellii* Benth. var. *grandiflora* J. M. Black *l.c.* 47: 368 (1923).

*Illust.*: Black (*l.c.*).

*Vern.*: Large-flower Amaranth. *Distr.*: BG—also S.A., Cent. Aust.

—Perianths <4 mm. long, in terminal spikes which often form loose panicles

7. Leaves *linear-lanceolate*; flowers with 5 segments,  $\pm$  *interrupted* in the spikes; fruit prominently *tuberculate-rugose* (decumbent or ascending plant):

\**A. muricatus* (Moq.) Hieron. *Plant. diaph. Flor. Argent.* 227 (1882).

*Euxolus muricatus* Moq. in *DC. Prodr.* 13<sup>2</sup>: 276 (1849).

*Illust.*: Paté in *Flor. Afr. Nord* 8: fig. 984 (1962).

*Vern.*: Rough-fruit Amaranth. *Distr.*: LMN (Koondrook, Diggora near Rochester, and Williamstown)—also S.A.

—Leaves *ovate to broadly oblong*; flowers with 2-3 segments, *continuous* on spikes 8

8. Plant *erect*; spikes *slender*, 1-5" long; fruit  $\pm$  *globular*,  $\pm$  1.5 mm. long, *strongly corrugated*, scarcely exceeding the perianth:

\**A. viridis* L. *Spec. Plant.* ed. 2, 2: 1405 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 466 (1948); Maiden, *Agric. Gaz. N.S.W.* 18: 797, col. (1907), as *A. vividus*; Paté in *Flor. Afr. Nord* 8: fig. 985 (1962), as *A. gracilis*.

*Vern.*: Green Amaranth. *Distr.*: ACLMN—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Plant *prostrate* or ascending (often perennial); spikes short and *thick*, seldom  $>1$ " long; fruit *ellipsoid*, 2-3 mm. long, *smooth* or  $\pm$  wrinkled, *much longer* than perianth:

\**A. deflexus* L. *Mant. Plant.* 2: 295 (1771).

*Illust.*: Paté in *Flor. Afr. Nord* 8: fig. 986 (1962); Coste, *Flor. Franc.* 3: fig. 3061 (1904).

*Vern.*: Spreading Amaranth. *Distr.*: CJKNP—also S.A., Tas., N.S.W., N.Z.

[The indigenous species, *A. macrocarpus* Benth. *Flor. aust.* 5: 216 (1870), is included by Ewart in *Flor. Vict.* 471 (1931) with the note: "On the Murray and Darling, and rare if native." No specimens are in Melbourne Herbarium from the Victorian side of the Murray River, the nearest occurrences being from near the Murray-Darling confluence, N.S.W. (Dec. 1853), and from Moulamein in the Riverina (Apr. 1950); in Sydney Herbarium the species is represented from Holbrook district (1946 & 1947) whence it is reported as a weed within 20 miles in the Murray. *A. macrocarpus* is related to *A. grandiflorus*, also having flowers of globular axillary clusters, but it is a much smaller plant (the leaves only 1-2 cm. long) and the 3-5 shorter perianth-segments are *oblanceolate*, not ovate-lanceolate.

Ewart (*l.c.*) also records *A. blitum* L. *Spec. Plant.* 2: 990 (1753) as "widely spread in Victoria", but the only voucher occurrence in Melbourne Herbarium is one from a garden at Warracknabeal (1902), and doubt even surrounds the identity of this material which may represent a hybrid or a form of *A. retroflexus* having reduced inflorescences—the perianth-segments are much more acuminate than in European collections of *A. blitum* and they vary from 3 to 5. *A. blitum* L. is a "nomen ambiguum", and the plant usually so-called should be referred to *A. lividus* L.]

### PTILOTUS R. Br. (1810)

[incl. *Trichinium* R. Br. (1817)]

1. Vestiture of *simple hairs* or *absent* 3  
Vestiture *hoary and stellate-tomentose*; spikes  $\pm$  *hemispherical*, to 2.5 cm. wide, in corymbose panicles, pinkish (semi-shrubs of Mallee region, the leaves obovate) 2
2. Leaves *grey-green* with  $\pm$  *undulate margins*, the stellate hairs hardly overlapping; flower-spikes  $>2$  cm. wide, *shortly cylindrical*; perianth  $>1$  cm. long, widely diverging from axis; ovary *glabrous*, on a *long pedicel*:



*P. atriplicifolius* (A. Cunn. ex Moq.) G. Ben in *Mitt. bot. St. Samml., Münch.* 2: 404 (1958).

*Trichinium atriplicifolium* A. Cunn. ex Moq. in DC. *Prodr.* 13<sup>2</sup>: 286 (1849);

*T. obovatum* Gaudich. var. *grandiflorum* Benth. *Flor. aust.* 5: 221 (1870).

*Illust.*: Schoenfeld in Ewart, *Plants indig. Vict.* t. 78 opp. 15 (1910), as *Trichinium atriplicifolium*.

*Vern.*: Silver-tails. *Distr.*: AFG—also S.A., N.S.W., Cent. Aust.

—Leaves densely *white-tomentose* with plane margins, the stellulæ closely overlapping; flowers in almost *globular* heads <1.5 cm. wide; perianth usually <1 cm. long; ovary *hairy* around summit, *very shortly* pedicellate:

*P. obovatus* (Gaudich.) F. Muell. *Fragm. Phyt. Aust.* 6: 228 (1868).

*Trichinium obovatum* Gaudich. in Freyc. *Voy. aut. Monde (Bot.)* 445, t. 49 (1829).

*Illust.*: Gaudichaud (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 458 (1948).

*Vern.*: Silver-tails. *Distr.*: ? CD—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[Known in Victoria only by a single collection (1892) labelled “Wimmera”, and it is very doubtful whether the species exists in this State at the present time. Many collections formerly named *P. obovatus* are in fact referable to *P. atriplicifolius*.]

3. Perianth *pink or reddish* at apex; bracts *hairy, acuminate*, ± opaque 8  
Perianth *green or yellowish* at apex or, if ever reddish (rarely), then the  
bracts glabrous, obtusish and translucent 4
4. Bracteoles 4-5 mm. long, ± *orbicular*, obtuse, *glabrous*, the nerve ±  
prominent; bracts acute, scarious; spikes cylindric, up to 6" long,  
1-1.5" wide, on long peduncles; perianth 12-16 mm. long, yellow-green  
(stems erect, slightly branched, 1-3 ft. high):

*P. polystachyus* (Gaudich.) F. Muell. *Fragm. Phyt. Aust.* 6: 230 (1868).

*Trichinium polystachyum* Gaudich. in Freycinet *Voy. aut. Monde (Bot.)* 445 (1826);

*T. alopecuroideum* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 12 (1838);

*P. alopecuroideus* (Lindl.) F. Muell. *Fragm. Phyt. Aust.* 6: 227 (1868).

*Illust.*: Gardner, *J. Dep. Agric. W. Aust.* ser. 2, 11: 531 (1934), as *Trichinium alopecuroideum*; Chippendale, *Wildflowers Cent. Aust.* 27, col. (1968), as *forma rubriflorus*.

*Vern.*: Long-tails. *Distr.*: ACFG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Bracteoles >6 mm. long and opaque, *or* acuminate and pubescent 5

5. Stems up to 1 ft. high; spikes 2-3 cm. wide; perianths <20 mm. long 7

Stems mostly >1 ft. high, not or little branched; spikes 4 cm. wide or more; perianths 25-30 mm. long 6

6. Leaves *oblong to obovate, obtuse*; spikes  $\pm$  4 cm. wide; bracts and bracteoles *acute*, their centres opaque and *tuberculate*; style *glabrous* throughout (Far N.W. Mallee, where extremely rare):

**P. nobilis** (Lindl.) F. Muell. *Fragm. Phyt. Aust.* 6: 227 (1868).

*Trichinium nobile* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 23 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 463 (1948); Benl, *Aust. Plants* 4: 119 fig. 3 a (June 1967); MacGillivray, *Vict. Nat.* 41: t. 4 opp. 108 (1924), as *Trichinium nobile*.

*Vern.*: Yellow-tails. *Distr.*: A—also S.A., N.S.W., Qd, Cent. Aust.

—Leaves *linear to lanceolate*, mostly *acute*, the margins often sinuate; spikes >5 cm. wide; bracts and bracteoles *obtuse* (or the former *acutish*), *smooth*, scarious; style *villous* in lower half (plant with long, fleshy, parsnip-like tap-roots—chiefly on western plains):

**P. macrocephalus** (R. Br.) Poir. in *Encycl. méth. (Bot.) Suppl.* 4: 620 (1816).

*Trichinium macrocephalum* R. Br. *Prodr. Flor. Nov. Holl.* 415 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 234, col. (1968); Chippendale, *Wildflowers Cent. Aust.* 25, col. (1968); Lee, *Wild Life (Melb.)* 12: 202 (1950).

*Vern.*: Feather-heads. *Distr.*: CDEHJKNPZ (the last a very isolated record on near-coastal heath)—also W.A., S.A., N.S.W., Qd, Cent. Aust.

7. Stems *prostrate*; leaves to 1" long; spikes  $\pm$  sessile within the last leaves, sometimes elongating; perianth-segments *hairy to the base* (widespread on plains of N. & W. Victoria):

**P. spathulatus** (R. Br.) Poir. in *Encycl. méth. (Bot.) Suppl.* 4: 620 (1816).

*Trichinium spathulatum* R. Br. *Prodr. Flor. Nov. Holl.* 415 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 236, col. (1968); Ewart, *Flor. Vict.* fig. 209 (1931); Reeves in Galbraith, *Wildflowers Vict.* ed. 3: t. 40 (1967); Fitch in Hooker f., *Flor. Tasm.* 1: t. 94, col. (1857), as *Trichinium spathulatum*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 75, col. (1965).

*Vern.*: Pussy-tails (Cat's-paw in Tas.). *Distr.*: ABCDFGHJMNPR—also W.A., S.A., Tas., N.S.W.

—Stems *erect*, somewhat branched; spikes  $\pm$  3 cm. wide, *subglobose*; perianth-segments externally *glabrous* in the lower third (Mallee areas where uncommon):

**P. seminudus** (J. M. Black) J. M. Black *Flor. S. Aust.* ed. 2: 328, fig. 462 (1948).

*Trichinium seminudum* J. M. Black in *Trans. roy. Soc. S. Aust.* 40: 61, t. 6 (1916).

*Illust.*: Black (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 462 (1948); Benl, *Aust. Plants* 4: 117 (June 1967).

*Vern.*: Rabbit-tails. *Distr.*: ABC—also S.A.

8. Stems usually *branched*, 2-3 ft. high; lower leaves *oblong-lanceolate*; spikes becoming *elongated*,  $\pm$  4 cm. wide; perianth *straight*:

*P. exaltatus* Nees in Lehm. *Plant. Preiss. 1*: 630 (1845).

*Trichinium exaltatum* (Nees) Benth. *Flor. aust. 5*: 227 (1870).

*Illust.*: Chippendale, *Wildflowers Cent. Aust. 23*, col. (1968); Black, *Flor. S. Aust. ed. 2*: fig. 459 (1948); Galbraith, *Wild Life (Melb.) 4*: 411 (1942), as *Trichinium exaltatum*; Reeves in Barrett, *Aust. Wildflower Book t. opp. 108* (1942), as "Pussy Tails"; Everard, *Wild Flowers World t. 132, col. fig. E* (1970).

*Vern.*: Lamb-tails. *Distr.*: ABCFGHJMR—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Stems *simple*, tufted, up to 1 ft. high; leaves all *linear*; spikes  $\pm$  *globular*, 2-3 cm. wide; perianth  $\pm$  *curved upwards*:

*P. erubescens* Schlechtendal in *Linnaea 20*: 575 (1847).

*Trichinium erubescens* (Schlechtendal) Moq. in *DC. Prodr. 13*<sup>2</sup>: 293 (1849).

*Illust.*: Black, *Flor. S. Aust. ed. 2*: fig. 461 (1948); Myers in Turner, *Forage Plants Aust. t. opp. 86* (1891), as *Trichinium erubescens*.

*Vern.*: Hairy-tails. *Distr.*: CDHJ (uncommon)—also S.A., N.S.W.

[As pointed out by J. M. Black, *Flor. S. Aust. ed. 2*: 324 (1948), R. Brown's two genera *Ptilotus* and *Trichinium* are "too closely related to be kept apart". The only difference is in the more or less glabrous perianth of the former, but several species have partly glabrous, partly hairy perianths and they connect these two groups. Poiret was the first to unite the genera (1817), synonymizing *Trichinium* under *Ptilotus*, and this course must be followed by all who consider the groups to be congeneric.]

#### ALTERNANTHERA Forsk. (1775)

1. Leaves *broadly spatulate* (the lamina about as broad as long); stems  $\pm$  *woolly*; bracteoles with sharp *rigid awns* 1-2 mm. long:

\**A. pungens* Humb. et al. *Nov. Gen. & Spec. 2*: 206 (1818).

*A. repens* (L.) Link *Enum. Plant. Hort. berol. 1*: 154 (1821), non J. F. Gmel. (1791);

*Achyranthes repens* L. *Spec. Plant. 1*: 205 (1753).

*Illust.*: King in O'Neil, *J. Dep. Agric. S. Aust. 61*: 378-79 (1958); King in Whittet, *Weeds (N.S.W. Dep. Agric.) t. 26, col.* (1958); O'Neil in *J. Agric. S. Aust. 61*: 378-79 (1958); Everist, *Common Weeds Farm & Pasture fig. 37* (1957)—all as *A. repens*; Leigh & Mulham, *Pastoral Plants Riverine Plain 74, col.* (1965).

*Vern.*: Khaki Weed. *Distr.*: ABCGJ—also S.A., N.S.W., Qd.

—Leaves *linear to lanceolate*; stems *glabrous* or almost so; bracteoles  $\pm$  *acuminate*, but *not awned*

2. Bracts and bracteoles about 2 mm. long, acute or *shortly acuminate*; flower-clusters mostly <1 cm. wide (widespread trailer of damp places):

*A. denticulata* R. Br. *Prodr. Flor. Nov. Holl.* 417 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 468 (1948); Bailey, *Weeds & susp. poison. Plants Qd* 157 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 142 (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 74, col. (1965).

*Vern.*: Lesser Joyweed. *Distr.*: ACDEHJLMNPRTVW—also S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Bracts and bracteoles about 3-4 mm. long, *long-acuminate*; flower-clusters mostly 1 cm. wide or more (uncommon plant of N.W. Mallee):

*A. nodiflora* R. Br. *Prodr. Flor. Nov. Holl.* 417 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 467 (1948); Bailey, *Weeds & susp. poison. Plants Qd* 157 (1906); Hutchinson & Dalziel, *Flora Trop. West Africa* 1: fig. 49 (1927).

*Vern.*: Common Joyweed. *Distr.*: AB—also W.A., S.A., Qd, N. Terr., Cent. Aust.

### Family NYCTAGINACEÆ

Plant *erect*, ± bushy; flowers *multicoloured*, scented, 2-3 cm. long, in clusters surrounded by a common *leafy involucre* *\*Mirabilis* (p. 119)

Plant with very slender *prostrate or ascending stems*; flowers *pinkish*, ± 5 mm. long, solitary or 2-4 in umbels, but *without* any conspicuous involucre (open plains, chiefly northern) *Boerhavia* (p. 119)

### \*MIRABILIS L. (1753)

\**M. jalapa* L. *Spec. Plant.* 1: 177 (1753).

*Illust.*: Curtis's bot. Mag. 11: t. 371, col. (1797); Paté in *Flor. Afr. Nord* 8: fig. 989 septo (1962).

*Vern.*: Four-o'clock (Marvel-of-Peru). *Distr.*: EN (occasional garden escape)—also N.S.W., Qd.

### BOERHAVIA L. (1753)

*B. diffusa* L. *Spec. Plant.* 1: 3 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 472 (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 44 (1886); Mueller, *Plants indig. Colon. Vict.* 1: t. 67 (1864/5), as *B. mutabilis*; Myers in Turner, *Forage Plants Aust.* t. opp. 87 (1891).

*Vern.*: Tah-vine. *Distr.*: AGHLMNRV—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[*Bougainvillea spectabilis* Willd. *Spec. Plant.* 2: 348 (1799) is a showy, prickly climber from tropical America. This member of the *Nyctaginaceæ* has several

garden varieties, and a brilliant magenta-flowered form is popular in Victoria where it sometimes persists as a vigorous creeper on old out-houses, fences etc.]

### Family PHYTOLACCACEÆ

#### \*PHYTOLACCA L. (1753)

\**P. octandra* L. *Spec. Plant.* ed. 2, 1: 631 (1762).

*Illust.*: Atkinson in *Orchard, J. Dep. Agric. S. Aust.* 53: 450 (1950); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 8 A (1951); Davey, *J. Dep. Agric. Vict.* new ser. 20: 226 & 227 (1922); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 55, col. (1958).

*Vern.*: Red-ink Weed. *Distr.*: JNPR—also W.A., S.A., N.S.W., Qd, N.Z.

[*P. dioica* L. *Spec. Plant.* ed. 2, 1: 632 (1762) is the South American "Ombu" or Umbra Tree—a small rapidly-growing tree to 30 ft., with buttressed trunk and evergreen poplar-like leaves. It sometimes persists, in spite of cutting, on old allotments and in deserted gardens of Victoria.]

### Family GYROSTEMONACEÆ

Shrub to 3 ft. high; leaves *linear*; flowers *solitary* in axils; carpels opening along *both* edges *Gyrostemon* (p. 120)

Tall shrub or pyramidal tree to 30 ft.; leaves *broadly oblanceolate* to  $\pm$  orbicular; flowers in short *axillary racemes*; carpels opening only along the *inner* (ventral) edge (plant hot-tasting) *Codonocarpus* (p. 120)

#### GYROSTEMON Desf. (1820)

*G. australasicus* (Moq.) Heimerl in *Natürl. PflFam.* III 1b: 12, t. 4 (1889).

*Cyclotrocha australasica* Moq. in *DC. Prodr.* 13<sup>2</sup>: 38 (1849).

*Illust.*: Heimerl (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 474 B-D & 476 (1948); Garnet Vegetation Wyperfeld Nat. Park fig. 8 n. 127 (1965); Mueller, *Key Syst. Vict. Plants* 2: fig. 43 (1886), as *Didymotheca pleiococca*.

*Vern.*: Wheel-fruit. *Distr.*: ABCF—also W.A., S.A., N.S.W., Cent. Aust.

#### CODONOCARPUS A. Cunn. ex Hook. (1830)

*C. cotinifolius* (Desf.) F. Muell. *Plants indig. Colon. Vict.* 1: 200 (1862).

*Gyrostemon cotinifolium* Desf. in *Mém. Mus. Hist. nat., Paris* 8: 116, t. 10 (1822).

*Illust.*: Desfontaines (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 161, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 477 (1948); Adam in Ewart, *Handb. For. Trees* t. 48 (1925); Mahood in Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2 part II: fig. 16 (1958).

*Vern.*: Bell-fruit Tree. *Distr.*: ABCFG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

## Family AIZOACEÆ [Ficoidaceæ]

1. Leaves relatively broad, *flat* on both surfaces 5  
Leaves narrow, very succulent, *cylindrical or triquetrous* 2
2. Leaves *cylindrical* (or slightly flattened on one side); fruit capsular 4  
Leaves distinctly *triangular* in section 3
3. Fruit *indehiscent, swollen and juicy*; leaves >2.5 cm. long, quite *smooth*; styles 6-15; seeds *smooth or reticulate* *Carpobrotus* (p. 123)  
As for the last, but leaf-surfaces *verrucose*, styles 4-5 and seeds wholly or partly *verruculose* (far N.W. Mallee only) *Sarcozona* (p. 124)  
Fruit *capsular, dry*; leaves <2 cm. long (often only 1 cm.), *glaucous*, sometimes slightly *falcate* *Lampranthus* (p. 123)
4. Plant *perennial, smooth* (without papillæ); leaves *persistent*, >1.5 cm. long; flowers on *long stiff pedicels*, pink or purple (trailing plant of saline ground on coast and in Mallee) *Disphyma* (p. 124)  
Plant *annual or biennial, densely papillose* and glistening; leaves *soon falling*, <1.5 cm. long; flowers small, numerous, *subsessile, white* (Murray Mallee in far N.W.) *\*Psilocaulon* (p. 122)
5. Leaves (and stems)  $\pm$  *hairy*, with or without minute papillæ; ovary *superior*, the perianth-segments *free* almost to base 8  
Leaves succulent, often *cordate*,  $\pm$  covered with *glistening papillæ*, otherwise *glabrous*; ovary  $\pm$  *inferior*, the perianth tubular in lower part 6
6. Flowers yellow or green; petaloid staminodia *absent*; fruit *indehiscent*, with bony endocarp *Tetragonia* (p. 125)  
Flowers white or purple; petaloid staminodia *present*; fruit a *capsule* 7
7. Annual or biennial; leaves on flowering branches *alternate, coarsely papillose*; staminodia *white*; capsule 5-locular *\*Gasoul* (p. 121)  
Prostrate perennial; leaves *all opposite, finely papillose*; staminodia *purple*; capsule 4-locular *\*Aptenia* (p. 122)
8. Leaves usually *recurved* at apex, beset with appressed, simple *hair-like scales*; perianth finely hairy on outer surfaces of segments; seeds 5 per capsule, finely and concentrically *ribbed*, without a caruncle or appendage *\*Galenia* (p. 126)  
Leaves *not recurved* at apex; perianth either externally *glabrous or densely stellate-hairy*; seeds *numerous*,  $\pm$  *granular, carunculate* and with prominent white filiform appendage *Glinus* (p. 126)

[The following arrangement of genera in *Aizoaceae* conforms to that adopted by J. M. Black in *Flora of South Australia* ed. 2: 336-344 (1948), except that his *Cryophytum* is replaced by *Gasoul*—the older and legitimate name.]

## \*GASOUL Adans. (1763)

Plant glistening with *large, bead-like*, water-holding papillæ (1.5-3 mm. wide); stems weak, *terete*; flower-pedicels short, *stout*, often crimson; petaloid staminodia much *longer than* perianth; capsule 10-12 mm. wide:

\**G. crystallinum* (L.) Rothmaler in *Notizbl. bot. Gart. Mus. Berl.* 15: 413 (1941).

*Mesembryanthemum crystallinum* L. *Spec. Plant.* 1: 480 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 479 (1948), as *Cryophytum crystallinum*; Bailey, *Manual cult. Plants* 360 fig. 61 c (1949), as *C. crystallinum*; Hutchinson, *Fam. Flowering Plants* ed. 2, I (Dicotyledons): fig. 274 (1959); Paté in *Flor. Afr. Nord* 8: fig. 995 (1962), as *C. crystallinum*.

*Vern.*: Common Ice-plant. *Distr.*: ACGNP—also W.A., S.A., N.S.W., Tas.

Plant with *fine* papillæ (<1 mm. wide); stems rather stiff,  $\pm$  *angular*; flower-pedicels rather *slender* (1-2 mm. wide), green; petaloid staminodia about *as long as* perianth; capsule 5-8 mm. wide:

\**G. aitonis* (N. J. Jacq.) Hj. Eichler *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 133 (1965).

*Mesembryanthemum aitonis* N. J. Jacq. *Hort. bot. vindob.* 3: 8 (1776);

*M. angulatum* Thunb. *Prodr. Plant. capens.* 91 (1800).

*Illust.*: Paté in *Flor. Afr. Nord* 8: fig. 996 *bis* (1962), as *Mesembryanthemum aitonis*; Morris, *Vict. Nat.* 50: t. 1 opp. 27 fig. 5, col. (1933), as *Cryophytum Aitonis*.

*Vern.*: Angled Ice-plant. *Distr.*: N (Coode Id)—also S.A.

[Mrs. L. Bolus, in *Notes Mesembr.* 3: 164-166 (1939), advances reasons for regarding the segregate genus *Cryophytum* [= *Gasoul*] as synonymous with *Mesembryanthemum* L. (in the strict sense), and she typifies the latter taxon by means of *M. nodiflorum* L.—an opinion to which the present writer cannot subscribe. The type of *Mesembryanthemum* L. (syn. *Ruschia* Schwantes, 1926) is surely *M. umbellatum* L.—as established by N. E. Brown in *Gdnrs' Chron.* ser. 3, 78: 232 (1925), also 87: 14 (1930); and there is no sound excuse for attempting to upset Brown's typification. Pax and Hoffmann in *Natürl. Pflfam.* ed. 2, 16c: 214 & 216 (1934) have adopted the Brownian concept.]

#### \*APTENIA N. E. Br. (1925)

\**A. cordifolia* (L.f.) Schwantes in *Gartenflora* 77: 69 (1928).

*Mesembryanthemum cordifolium* L.f. *Suppl. Plant.* 260 (1781).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 480 (1948); Paté in *Flor. Afr. Nord* 8: fig. 996 *ter* (1962); Berger, *Mesembrianthemum und Portulacaceen* 54 (1908).

*Vern.*: Heart-leaf Ice-plant. *Distr.*: CEGNW—also S.A., N.S.W.

#### \*PSILOCAULON N. E. Br. (1925)

\**P. tenue* (Haw.) Schwantes in *Gartenflora* 77: 69 (1928).

*Mesembryanthemum tenue* Haw. *Revis. Plant. succul.* 175 (1821);

*M. bicornis* Sond. in Harv. & Sond. *Flor. capens.* 2: 434 (1862).

*Vern.*: Wiry Noon-flower. *Distr.*: A—also S.A.

[Ewart, *Flor. Vict.* 481 (1931), referred to this species only in a footnote, with the remark "is spreading in the Mildura district since 1928"; but in Melbourne Herbarium there is a Mildura collection dated 1892. Sonder (*l.c.*) had described *Mesembryanthemum bicornis* as distinct from *M. tenue* Haw., by virtue of its *pentamerous* flowers; but this single character is insufficient to justify recognition of two species.]

## LAMPRANTHUS N. E. Br. (1930)

*L. tegens* (F. Muell.) N. E. Br. in *Gdnrs' Chron.* ser. 3, 87: 212 (1930).

*Mesembryanthemum tegens*. F. Muell. *Fragm. Phyt. Aust.* 5: 157 (1866).

*Illust.*: Morris, *Vict. Nat.* 50: t. 1 opp. 27 fig. 3, col. (1933)—leaves.

*Vern.*: Little Noon-flower. *Dist.*: N (mouth of Yarra R.)—also N.S.W.

[Apart from this single species, until now considered indigenous in Victoria, the genus is entirely African. There is a strong likelihood that *L. tegens* reached Melbourne on an early sailing ship via the Cape of Good Hope (perhaps with ballast), and was described in its adopted home long before being recognized in South Africa. *L. caespitosus* (L. Bolus) N. E. Br. from brackish soil on Paarden Island, Cape Town, is most probably identical (see report by N. E. Brown in *Proc. roy. Soc. Vict.* new ser.: 21: p. 544 (1909)). The genotype, *L. multiradiatus* (Jacq.) N. E. Br., is very frequently grown on rockeries and embankments in Victoria, where it tends to persist about old gardens. The species has smooth, nearly terete, slender, slightly glaucous leaves and large, often ragged, rosy flowers (about 2" wide); it is more tolerant of damp cold conditions than most introduced mesembryanthea.]

## CARPOBROTUS N. E. Br. (1925)

[The following key characters have been kindly supplied by Dr. S. T. Blake (Brisbane) who has made a special study of this difficult genus.]

1. Leaves in living state  $\pm$  *equilateral* at and near middle; stamens 280-600; petals yellow, pink or purplish, paler but *without* any well-marked white region at and near base, in the dried state with brownish streaks *throughout their width*; filaments yellow, *also* brown-streaked when dry; at least some seeds *symmetrical*,  $1\frac{1}{3}$ - $1\frac{1}{2}$  times as long as wide 3  
Leaves in living state mostly *thicker than wide*, 6-11 times as long as wide; stamens 20-250; petals purple to magenta, *prominently white* at and near base, in the dried state with brown or purplish streaks *only close to the mid-line*; filaments mostly whitish and *not* streaked when dry; seeds all *asymmetrical*,  $1\frac{1}{2}$ -2 times as long as wide 2
2. Petals 60-200, acutish to  $\pm$  obtuse in outline, 20-27 mm. long; stamens 3- to 4-seriate; calyx-tube *turbinate to globose-ellipsoid*, commonly *pedicellate*; *both* sides of leaves often  $\pm$  *convex*, mostly 8-11 mm. wide (coastal plant):

*C. rossii* (Haw.) Schwantes in *Gartenflora* 77: 68 (Feb. 1928).

*Mesembryanthemum rossii* Haw. *Revis. Plant. succul.* 120 (1821);

*M. æquilaterale* sens. Ewart *Flor. Vict.* 481 (1931) *pro parte*, non.

*M. æquilaterum* Haw. (1794).

*Illust.*: Blake, *Contr. Qd Herb.* n. 7: 53 fig. 7 (1969); Curtis, *Student's Flor. Tasm* 2: 238 fig. 64 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 478 A & 483 (1948), both as *C. æquilaterus*; Morris, *Vict. Nat.* 50: t. 1 opp. 27 fig. 1, col. (1933), as *C. æquilaterale*; Salm-Dyck, *Monogr. . . . Mesembryanth.* sect. 19: t. 2 (1836-42), as *Mesembryanthemum rossii*.

*Vern.*: Karkalla (S. Aust. aboriginal name). *Dist.*: CEPTW—also W.A., S.A., Tas.



- Petals 45-60, acute to acuminate, 6-12 mm. long; stamens 1- to 3-seriate; calyx-tube  $\pm$  *oblong*, transversely thickened at top, *sessile or nearly so*; fruit obovoid-oblong to ellipsoid; leaves greyish, commonly with one side  $\pm$  *concave* and narrower than the other convex side, the sides 4-9 mm. wide (inland plant):

*C. modestus* S. T. Blake in *Contr. Qd. Herb.* n. 7: 30, 55 fig. 8 (1969).

*Illust.*: Blake (*l.c.*).

*Vern.*: Inland Pigface. *Distr.*: CDHJMN—also S.A., N.S.W.

3. Main stems 8-13 mm. thick; petals 120-130, *yellow* before fading, 30-35 mm. long; stamens 400-600; keel of leaf and larger sepals *denticulate almost throughout*; leaves 4-7 times as long as wide (up to 1" broad at base); fruit *yellow, commonly wider than long*:

\**C. edulis* (L.) L. Bolus in *Flowering Plants S. Afr.* 7: sub. t. 247 (1927).

*Mesembryanthemum edule* L. *Syst. Nat.* ed. 10: 1060 (1759).

*Illust.*: Blake, *Contr. Qd. Herb.* n. 7: 43 fig. 2 (1969); Dell in Gardner, *Wildflowers W. Aust.* 42, col. (1959); Black, *Flor. S. Aust.* ed. 2: fig. 484 (1948); Ross-Craig, *Drawings Brit. Plants* 11: t. 39 (1958); *Curtis's bot. Mag.* 144: t. 8783, col. (1918), as *Mesembryanthemum edule*; Rice, *Wildflowers Cape Good Hope* t. 63, col. (1951).

*Vern.*: Hottentot Fig. *Distr.*: P—also all States except Qd, N.Z.

- Main stems 2-10 mm. thick; petals 70-150, *purple to magenta* but paler towards base; stamens 280-400; keel of leaf and larger sepals *smooth* for the greater part (below upturned portion); leaves 6-12 times longer than wide; fruit *longer than wide*:

\**C. æquilaterus* (Haw.) N. E. Br. in *J. Bot., Lond.* 66: 324 (1928).

*Mesembryanthemum æquilaterum* Haw. *Obsns Gen. Mesembr.* 390 (1794).

*Illust.*: Blake, *Contr. Qd. Herb.* n. 7: 45 fig. 3 (1969).

*Vern.*: Angled Pigface. *Distr.*: APTZ—also Tas., N.S.W.

#### SARCOZONA J. M. Black (1934)

*S. præcox* (F. Muell.) S. T. Blake in Hj. Eichler *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 134 (1965).

*Mesembryanthemum præcox* F. Muell. in *Linnaea* 25: 384 (1853);

*S. pulleinei* (J. M. Black, ut *Carpobrotus* sp.) J. M. Black in *Trans. roy. Soc. S. Aust.* 58: 176 (1934):

*Illust.*: Blake, *Contr. Qd. Herb.* n. 7: 57 fig. 9 & 59 fig. 10 (1969); Black, *Flor. S. Aust.* ed. 2: fig. 485 (1948), as *S. pulleinei*.

*Vern.*: Sarcozona. *Distr.*: A—also S.A.

#### DISPHYMA N. E. Br. (1925)

*D. australe* (Soland.) J. M. Black in *Trans. roy. Soc. S. Aust.* 56: 40, t. 1, fig. 4 (1932).

*Mesembryanthemum australe* Soland. in Ait. *Hort. kew.* 2: 187 (1789).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 175, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 486 (1948); Brooks, *Aust. native Plants* t. inter 48 & 49 (1959), as *Carpobrotus australe*; Morris, *Vict. Nat.* 50: t. 1 opp. 27 fig. 6, col. (1933); Mueller, *Key Syst. Vict. Plants* 2: fig. 39 (1886), as *Mesembryanthemum australe*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 76, col. (1965).

*Vern.*: Rounded Noon-flower. *Distr.*: ACEGJNPTWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

[Australian populations were recently described as a new species, *D. blackii* R. J. Chinnock in *N.Z. J. Bot.* 9: 347 (1971).]

### TETRAGONIA L. (1753)

Prostrate herb; flowers *greenish*,  $\pm$  *sessile*; stamens up to 16; styles (and loculi) 5-11; fruit becoming *hard and angular*, with 3-8 *short horns*:

*T. tetragonoides* (Pallas) O. Kuntze *Revis. Gen. Plant.* 2: 264 (1891).

*Demidovia tetragonoides* Pallas *Enum. Plant. Hort. Demidof Mosc.* 150, t. 1 (1781);

*T. expansa* Murr. in *Comment. Soc. Sci. Gottingen.* 6: 13 (1783).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 280, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 487 (1948); Pax & Hoffmann, *Natürl. PflFam.* ed. 2, 16c: 233 fig. 103 (1934); Curtis's *bot. Mag.* 50: t. 2362, col. (1822)—last three as *T. expansa*.

*Vern.*: New Zealand Spinach. *Distr.*: ABKNPWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

Scrambling or trailing semi-shrub; flowers *yellow*, on *slender pedicels*; stamens 12-25; styles (and loculi) 2, rarely 3; fruit a *soft, berry-like, reddish* (finally almost black) drupe, *without horns* (but crowned by the persistent perianth-lobes):

*T. implexicoma* (Miq.) Hook. f. *Flor. Tasm.* 1: 148 (1856).

*Tetragonella implexicoma* Miq. in *Lehm. Plant. Preiss* 1: 246 (1844-'5).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 488 (1948); Lee, *Wild Life* 8: 43 (1946); Morris, *Vict. Nat.* 50: 33 fig. 1 (1933); Ewart, *Flor. Vict.* fig. 211 (1931); Mueller, *Key Syst. Vict. Plants* 2: fig. 40 A-B (1885); also Schönfeld in Mueller, *Plants indig. Colon. Vict.* 1 (Lithogr.): t. 13 (1864-'5).

*Vern.*: Bower Spinach. *Distr.*: EKNPTWZ—also W.A., S.A., Tas., N.S.W.

[Although J. Hutchinson, *Fam. Flowering Plants* ed. 2, 1 (Dicotyledons): 430 (1959), retained *Tetragonia* in the family *Aizoaceæ*, Hj. Eichler in his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 133 (1965) has assigned it to a separate family, *Tetragoniaceæ*. Eichler also takes up the name *T. amplexicoma* instead of *T. implexicoma*, on p. 135. Miquel's original spelling was certainly "*amplexicoma*", but this was corrected to *implexicoma* in *Plantæ Preissianæ* 2: 235 (1848), the earlier rendering apparently considered to be a typographic error. The meaning of *implexicoma* ("intertwined branchlets") is certainly much more in accord with the original description of this plant.

Two South African species, *T. decumbens* Mill. and *T. fruticosa* L. (both frequent on the Cape Peninsula), appeared at Coode Island, Melbourne, in Oct. 1908; they were collected there several times up to 1913, but now seem to have died out. These have large, prominently *winged* fruits, 1 cm. long in the former and 2 cm. long in the latter species which also differs in its narrow leaves and flowers in a loose *terminal spike*. South African *T. zeyheri* Fenzl (Sea Spinach) is closely related to *T. decumbens* and is well established on beach-dunes near Perth, W.A.]

### GLINUS L. (1753)

Stems (and whole plant) softly and densely *stellate-hairy*; leaves 6-20 mm. wide; perianth 6-8 mm. long; stamens 8-18; styles and capsule-valves 5:

*G. Iotoides* L. *Spec. Plant.* 1: 463 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 492 (1948); Morris, *Vict. Nat.* 50: 34 fig. 2 (1933); Mueller, *Key Syst. Vict. Plants* 2: fig. 41 A-B (1885); Hutchinson, *Fam. Flowering Plants* ed. 2, 1 (Dicotyledons): fig. 272 (1959); Pax & Hoffmann, *Natürl. PflFam.* ed. 2, 16c: 221 fig. 95 E-K (1934).

*Vern.*: Hairy Carpet-weed. *Distr.*: ABC—also S.A., Cent. Aust., N.S.W.

Stems with *sparse simple hairs* or almost glabrous; leaves <6 mm. wide; perianth  $\pm$  3 mm. long; stamens 3-4 (rarely more); styles and capsule-valves 3:

*G. oppositifolius* (L.) Aug. DC. in *Bull. Herb. Boiss. sér. 2, 1*: 559 (1901).

*Mollugo oppositifolia* L. *Spec. Plant.* 1: 89 (1753);

*G. spergula* (L., ut *Mollugo* sp.) Steud. *Nom. bot.* ed. 2, 1: 688 (1840).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 493 (1948); Pax & Hoffmann, *Natürl. PflFam.* ed. 2, 16c: 221 fig. 95 A-D (1934).

*Vern.*: Slender Carpet-weed. *Distr.*: ACN—also S.A., Cent. Aust., N.S.W.

[In *Fam. Flowering Plants* ed. 2, 1 (Dicotyledons): 429 (1959), J. Hutchinson assigns *Glinus* to the derivative family *Molluginaceæ*—"weedy plants of dry places"—but does not make it clear how the group can always be separated from *Aizoaceæ*.]

### \*GALENIA L. (1753)

Leaves *scattered*, grey-green, *sparsely* covered by hair-like scales; stems bearing *short appressed* scale-hairs; perianth conspicuous, *pinkish* inside; styles 5:

\**G. pubescens* (Eckl. & Zeyh.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manch* 1916: 624 (1917).

*Aizoon pubescens* Eckl. & Zeyh. *Enum. Plant. Afr. austr. extratrop.* Part 3: 326 (1837).

*Vern.*: Galenia. *Distr.*: HKMNP—also S.A.

Leaves *crowded* at ends of branches, *whitish* from dense vestiture of hair-like

scales; stems covered with *long spreading* scale-hairs; perianth immersed in hairs, *yellow* inside; styles usually 4:

\**G. secunda* (L.f.) Sond in Harv. & Sond. *Flor. capens.* 2: 474 (1862).

*Aizoon secundum* L.f. *Suppl. Plant.* 261 (1781).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 495 (1948).

*Vern.*: *Galenia*. *Distr.*: NP—also S.A., Tas. (Flinders Id), N.S.W.

[A striking species of *Conicosia*—probably referable to *C. bijlilii* N. E. Br. (1931), but the identity still uncertain—was found (Mar. 1955) growing over several acres of a sand-blow about 5 miles east of Drysdale, toward Indented Head, where it had formed small hummocks. This introduced succulent from South Africa may be recognized by its slender almost cylindrical leaves, large solitary *golden* flowers (2-3" wide) on bare elongated pedicels, 5 long slender calyx-lobes, narrow long-acuminate petaloid staminodia, numerous styles (10 or more), conical summit of ovary and large *obconic fruiting-capsule* (up to 1½" wide).

*Mesembryanthemum tumidulum* Haw. and *Drosanthemum candens* (Haw.) Schwantes are often grown for ornament on rockeries or embankments, especially near the sea, and may appear occasionally as garden escapes. Both are South African succulents, the latter with long-trailing slender prostrate stems, very *papillose* short clavate leaves and pink flowers in which the 5 nectary-glands are *separate*, the former more erect and shrubby with leaves *not* or only minutely papillose and the massed purplish flowers with nectary-glands *united in a ring*. *M. tumidulum* was mis-identified with *M. laxum* Haw. in Ewart's *Flor. Vict.* 481 (1931); more recently it has been found growing spontaneously near the Wimmera R., Dimboola (Oct. 1960).

South African *Aizoon rigidum* L.f. var. *angustifolium* Sond. was found at Coode Island, Melbourne, in Dec. 1905; it persisted there, at least until 1912, but seems to have died out since. This procumbent, silky-hairy semi-shrub closely resembles *Galenia secunda*, but has larger flowers (to 1 cm. long) with more than 10 stamens.]

### Family PORTULACACEÆ

1. Flowers *yellow*; style-branches 4-6; ovary *half-inferior*, the upper free part of fruit *circumscissile* (annual) *Portulaca* (p. 127)
- Flowers *white, pink or purple*; style-branches 3; ovary *superior*, the fruit splitting into 3-4 valves 2
2. Leaves *opposite*; stamens 3 or 5 *Montia* (p. 129)
- Leaves *alternate* or all radical (bracts never opposite); stamens 5 to many (rarely 3) 3
3. Perennial, with 5 stamens *regularly opposite* the 5 large white petals; seeds <10 *Montia* (p. 129)
- Annual, with stamens (3 to many) *not* regularly opposite the pink or purplish petals; seeds numerous [except in *C. corrigioloides*] *Calandrinia* (p. 128)

### PORTULACA L. (1753)

*P. oleracea* L. *Spec. Plant.* 1: 445 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 497 (1948); Allan, *Bull. Dep. sci. industr.*

*Res.*, N.Z. 83: 79 (1940); Mahood in Chippendale, *Poison Plants N. Terr.* Ext. Art. n. 2 part II: fig. 17 (1958); Paté in *Flor. Afr. Nord* 8: fig. 1007 (1962); Coste, *Flor. Franc.* 2: fig. 1326 (1903); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 98 fig. 2, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 143 (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 77, col. (1965).

*Vern.*: Common Purslane. *Distr.*: ACEGJMNRVWZ—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust., N.Z.

[The Brazilian *P. grandiflora* Hook. (Common Portulaca) has large flowers about 1" diam., in a wide range of brilliant colours; it is popular in Victorian gardens, as a summer-blooming annual, and sometimes persists by successive seeding.]

### CALANDRINIA Humb. et al. (1823)

1. Leaves *obovoid or shortly clavate*,  $\pm$  5 mm. long; pedicels very short; sepals *falling away* before fruit ripens; capsule *dark*,  $\pm$  *globular*, *tardily dehiscent*, with numerous minute granular seeds; stamens 5-8:

*C. neesiana* Hj. Eichler in *Taxon* 12: 295 (1963).

*C. pygmæa* F. Muell. *Fragm. Phyt. Aust.* 1: 175 (1859)—*nom. illeg.*;

*Talinum nanum* Nees in *Lehm. Plant. Preiss.* 1: 246 (1844-45), non

*C. nana* Phil. (1894).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 31 (1886), as *Claytonia pygmæa*.

*Vern.*: Pigmy Purslane. *Distr.*: ABCDEFGHJMN—also W.A., S.A., Tas., N.S.W.

—Leaves *linear, spatulate or  $\pm$  cylindrical*, 1-5 cm. long; sepals *persistent*; capsule *pale, ovoid to cylindrical, opening readily* 2

2. Flowers *numerous, in short dense racemes*; pedicels *very short* (1-2 mm.); sepals 1-2 mm. long; capsule *cylindrical*, with only 1-2 smooth shining seeds; stamens 3:

*C. corrigioloides* F. Muell. ex Benth. *Flor. aust.* 1: 175 (1863).

*Vern.*: Strap Purslane. *Distr.*: ABCFGT—also W.A., S.A., N.S.W.

—Flowers *relatively few* (<10), *in very open racemes*; pedicels *manifest, elongated*; capsule *ovoid to conic*; seeds *numerous* 3

3. Flowering stems *leafy*; sepals >5 mm. long, *acuminate*,  $\pm$  *papillate* externally; petals *purple*,  $\pm$  10 mm. long; stamens 10-12; capsule  $\pm$  10 mm. long, *acuminate*, on *erect pedicel*:

\**C. caulescens* Humb. et al. *Nov. Gen. & Spec.* 6: 78, t. 526 (1823).

*Illust.*: Turpin in Humboldt etc. (*l.c.*); Clements in *Nat. geogr. Mag.* 51: t. 6 (1927); Jepson, *Manual flowering Plants Calif.* 345 (1923).

*Vern.*: Purple Purslane. *Distr.*: AJMNRTVWZ—also S.A., Tas., N.S.W., NZ.

—Flowering stems *naked*; sepals 3-4 mm. long, *never acuminate, glabrous*; petals *pink or almost white*, <6 mm. long; stamens *rarely* >8 (often 5-6); capsule <6 mm. long, on a  $\pm$  *reflexed pedicel* 4

4. Sepals broadly acute, obscurely veined; seed smooth, very lustrous, >0.5 mm. wide:

**C. calyptrata** Hook. f. in Hook. *Icon. Plant.* 3: t. 296 (1840).

*Illust.*: Hooker f. (*l.c.*); Curtis, *Student's Flor. Tasm.* 1: fig. 21 (1956); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 10 n. 129 (1965); Rodway, *Tasm. Flor.* [t. 5] (1903).

*Vern.*: Pink Purslane. *Distr.*: ABCDEFGHJMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., N. Terr.

—Sepals obtuse, prominently net-veined; seed minutely granular,  $\pm$  0.5 mm. wide:

**C. eremæa** Ewart *Flor. Vict.* 486 (1931).

*C. pusilla* Lindl. in Mitch. *J. Exped. trop. Aust.* 360 (1848), non Barn. in C. Gay *Flor. Chile* 2: 485 (1847).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 146 (1970).

*Vern.*: Small Purslane. *Distr.*: ABCFGHJMNVTW—also S.A., N.S.W., A.C.T., Cent. Aust.

[Ewart in *Flor. Vict.* 487 (1931) records as also Victorian *C. volubilis* Benth. and *C. brevipedata* F. Muell., remarking that the former is "widely spread" through the State; but in Melbourne Herbarium there are no voucher specimens of either from Victoria. Misdeterminations of *C. eremæa* are doubtless responsible for the erroneous record of *C. volubilis*—a rare twining plant of arid country in S. Aust. and western N.S.W., distinguished from *C. eremæa* by its *flexuose pedicels*, *non-reticulate sepals* and *narrow pointed capsule* at least twice as long as the calyx. *C. brevipedata* is widespread in S. Aust. and W. Aust., but authentic material from western Victoria is lacking; this small plant differs from *C. calyptrata* in having *erect* fruiting pedicels, only 3-4 stamens and only about 6 large seeds (1.2 mm. broad).]

## MONTIA L. (1753)

[incl. *Claytonia* sens. auctt. Aust., non strict. L (1753)]

1. Plant a mud-loving *rhizomic perennial*, with *alternate* stem-leaves; petals conspicuous, equal, 5-8 mm. long, white; stamens 5 (rhizomes sometimes moniliform, with *bulbous internodes*):

**M. australasica** (Hook. f.) Pax & Hoffm. in *Natürl. PflFam.* ed. 2, 16c: 259 (1934).

*Claytonia australasica* Hook. f. in Hook. *Icon. Plant.* 3: t. 293 (1840).

*Illust.*: Hooker (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 541, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 498 (1948), as *C. australasica*; Sourry, *Aust. Wild Life* 4<sup>3</sup>: 15 (1962); Mass, *Flowers aust. Alps* 23 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 144 (1970), as *Neopaxia australasica*.

*Vern.*: White Purslane (Austral Spring Beauty). *Distr.*: CDEJKMNPRSTVWX—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Plant chiefly *annual*, *non-rhizomic*; stem-leaves *opposite*; petals <5 mm. long

2. Stem-leaves 2, *connate*, forming a large *saucer-like involucre* beneath inflorescence; expanded flowers *conspicuous*, white, 5-8 mm. wide; petals *equal, free*; stamens 5:

\**M. perfoliata* (Donn. ex Willd.) Howell in *Erythea* 1: 38 (1893).

*Claytonia perfoliata* Donn. ex Willd. *Spec. Plant.* 1: 1186 (1798).

*Illust.*: *Curtis's bot. Mag.* 33: t. 1336, col. (1810); Ross-Craig, *Drawings Brit. Plants* 6: t. 2 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 3: 268, 270 (1909).

*Vern.*: Miner's Lettuce. *Distr.*: DMN—also S.A., N.Z.

—Stem-leaves *numerous, not connate*; flowers *inconspicuous*, pinkish, 2-3 mm. wide but often *cleistogamous*; petals *unequal, ± united* at base; stamens 3:

*M. fontana* L. *Spec. Plant* 1: 87 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 508 (1948); Ross-Craig, *Drawings Brit. Plants* 6: t. 3 (1952); Pax in *Natürl. PflFam.* III 1 b: 58 (1889); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 223 (1957); Burbidge, *Flor. Aust. Cap. Terr.* fig. 145 (1970).

*Vern.*: Water-blinks. *Distr.*: CDEJNRSTV—also S.A., N.S.W., A.C.T., N.Z.

[As here used, in its broad Linnæan sense, the name *M. fontana* embraces plants in which the seed-coat varies from shallowly reticulate and highly lustrous to coarsely tuberculate with a dull surface; but some authorities prefer to recognize the extreme and intermediate variants as distinct species. Victorian (and most Australian) populations are referable to the var. *chondrosperma* Fenzl in Ledebour *Flor. Ross.* 2: 152 (1843), having dull tuberculate seeds; *M. verna* Neck. 1768 (*nom. illeg.*) and *M. minor* C. C. Gmel. 1805 (*nom. illeg.*) are both synonymous. In *Watsonia* 3: 4 (1953), S. M. Walters assigns subspecific rank to the var. *chondrosperma*.

The small, chiefly American family *Basellaceæ* (4 genera of herbaceous vines) has close affinities with *Portulacaceæ*. One species, *Anredera cordifolia* (Tenore) van Steenis in *Flor. Malesiana* 5: 303, fig. 2 a-j (1957), is widely cultivated as an ornamental creeper in warmer countries. This is the Madeira Vine, Mignonette Vine or Potato Vine, reproducing vegetatively from small axillary tubercles and often erroneously called "*Boussingaultia baselloides*" (another species of *Anredera*, native to Ecuador). It has a thick underground rhizome, sending up annual shoots to 10 ft. high or more. The fleshy, glabrous leaves are somewhat heart-shaped and up to 4" long. Small, white, fragrant flowers are numerous in slender axillary racemes 2-12" long. *A. cordifolia* occasionally scrambles over fences and outhouses in the Melbourne suburbs, tending to persist in spite of efforts at eradication; it has been noted also at Camperdown and Tarrawingee (near Wangaratta), but is not truly naturalized.]

### Family CARYOPHYLLACEÆ

[Key to genera adapted from that by S. M. Walters in *Flora Europæa* 1: 115-116 (1964)]

- |   |   |
|---|---|
| 1. <i>Stipules absent</i>   | 7 |
| <i>Stipules present</i> (if sometimes minute, then fruit an achene) | 2 |

2. Leaves *alternate*, glabrous, glaucous; fruit an *achene* (small,  $\pm$  glaucous pink-flowered herb, localized in Melton & Wangaratta districts) 3  
*\*Corrigiola* (p. 132)
- Leaves *opposite* (or verticillate) 3
3. Petals *present*; fruit a *capsule*; styles 3 or 5 5  
 Petals *absent*; fruit a 1-seeded *achene*; stigmas 2; flowers sessile 4
4. Leaves *aristate*, with *large silver-scarious stipules*; perianth with *few appressed hairs* (prostrate  $\pm$  silky perennial, scattered at Warrambeen, Werribee R., Maribyrnong R., Melbourne area, Wodonga & Genoa) 4  
*\*Paronychia* (p. 132)
- Leaves *blunt*, with *minute stipules*; perianth *densely hirsute with long erect hairs* (small, hairy, minute-flowered annual of far N.W. Mallee) 4  
*\*Herniaria* (p. 133)
5. Leaves *obovate-spathulate*; petals  $<$  half as long as sepals; styles 3, *united* toward base (widely spread, small glabrous annual) 4  
*\*Polycarpon* (p. 133)
- Leaves *linear to subulate*; petals almost or quite as long as sepals; styles *free* 6
6. Stipules *never* connate, often *deciduous*; leaves  $\pm$  fascicled; styles 5 (fruiting pedicels usually *reflexed*) 5  
*\*Spergula* (p. 133)
- Stipules *connate, persistent*; styles 3 and ovary 3-carpellate 5  
*Spergularia* (p. 133)
7. Sepals *united* for greater part, forming a distinct and sometimes inflated calyx-tube; fruit a *capsule* 14  
 Sepals *free* (if ever joined toward base, then fruit a *nutlet*) 8
8. Fruit an *indehiscent nutlet*; styles 2; petals absent 8  
*Scleranthus* (p. 139)
- Fruit a *capsule*; styles 3-5 9
9. Capsule-teeth *twice as many* as the styles 12  
 Capsule-teeth *as many* as the styles 10
10. Flowers *many* in lax cymes; sepals 5; capsule 3-valved (small glabrous annual around Nelson in far S.W.) 11  
*\*Minuartia* (p. 139)
- Flowers *solitary* on longish peduncles; capsule 4- or 5-valved 11
11. Stamens 4, *opposite* the 4 sepals; capsule 4-valved (plant *branching*) 11  
*Sagina* (p. 138)
- Stamens 5, *alternate* with the 5 sepals (petals absent); capsule 5-valved (plant densely tufted, *almost stemless*) 11  
*Colobanthus* (p. 139)
12. Petals *absent*; styles 3 (glabrous annual) 11  
*Stellaria* (p. 135)
- Petals *present*, 5, *entire*, much shorter than sepals; styles 3 (*pubescent* annual) 11  
*\*Arenaria* (p. 135)
- As for the last, but plant *glabrous*, petals and styles 4 11  
*\*Moenchia* (p. 137)
- Petals *present, deeply bifid* 13
13. Leaves *glabrous*; styles 3 11  
*Stellaria* (p. 135)
- Leaves  $\pm$  *hairy*; styles 5 11  
*\*Cerastium* (p. 137)
14. Calyx-tube veined *only* with the 5 mid-nerves of sepals; styles 2 16  
 Calyx-tube with *prominent commissural veins* alternating with mid-nerves of sepals; styles 3-5 15



15. Capsule-teeth *twice as many* as styles (which are usually 3) \**Silene* (p. 141)  
 Capsule-teeth *as many* as styles (usually 5); petals contorted in bud \**Lychnis* (p. 144)
16. Calyx-tube sharply 5-angled or *winged*, without scarious commissures \**Vaccaria* (p. 144)  
 Calyx-tube *wingless* 17
17. Commissures of calyx (between the 5 nerves) *never scarious* (occasional biennial or perennial garden escapes) 19  
 Commissures of calyx *scarious* (annuals; leaves linear) 18
18. Flowers clustered in a *long-pedunculate head* and enveloped by *wide scarious bracts*; seeds *shield-shaped* \**Petrorhagia* (p. 143)  
 Flowers *solitary* in forks of branching stems, without bracts; seeds *reniform* \**Gypsophila* (p. 143)
19. Epicalyx *absent*; leaves *ovate-lanceolate* \**Saponaria* (p. 144)  
 Epicalyx *present*, of several erect appressed scales; leaves *linear* \**Dianthus* (p. 144)

[In *Fam. Flowering Plants* ed. 2, 1 (Dicotyledons): 432 (1959) J. Hutchinson assigns *Paronychia*, *Corrigiola*, *Herniaria* and *Scleranthus* to a distinct family, *Illecebraceæ*, by virtue of their leathery calyces, lack of petals and indehiscent 1-seeded fruits; but this concept was unacceptable to the compilers of the *Flora Europæa* Vol. 1 (1964).]

### Sub-family PARONYCHIOIDÆ

\*CORRIGIOLA L. (1753)

\**C. litoralis* L. *Spec. Plant.* 1: 271 (1753).

*Illust.*: Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1040, col. (1920); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 108 fig. 4, col. (1909).

*Vern.*: *Corrigiola*. *Distr.*: NR—also W.A.

\*PARONYCHIA Adans. (1762-63)

\**P. chilensis* DC. *Prodr.* 3: 370 (1828).

*Illust.*: Martius, *Flor. brasil.* 14<sup>a</sup>: t. 57 fig. 1 (1872).

*Vern.*: Chile Nailwort. *Distr.*: JNR.

[It is singular that the 3 species of *Paronychia* naturalized in Australia should each be confined to a separate State—*P. argentea* Lam. in S.A., *P. chilensis* DC. in Vic. and *P. brasiliiana* DC. in N.S.W. The first is distinguished by its glabrous leaves and large, *dense, silvery heads* of flowers, with *hooded sepals*  $\pm 2.5$  mm. long. The last differs from *P. chilensis* in having a completely *glabrous* calyx, its broad lobes bearing spiny dorsal awns about  $\frac{1}{2}$  the length of each sepal (cf. awns  $< \frac{1}{2}$  the sepal-length in the narrower-lobed *P. chilensis*). The differences between these two closely related South American species were clearly set out by P. Rohrbach in *Linnaea* 37: 201-202 (1872). In his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 146 (1965), H. J. Eichler re-determines the Victorian plant as *P. brasiliiana*—an opinion that the writer cannot endorse. In Nov. 1969 a small occurrence of

undoubted *P. brasiliiana* was noted in the grounds of the Forests Commission's headquarters at Genoa, within 10 miles of the N.S.W. border. This species was originally described by De Candolle, in Poiret *Encycl. méth. Bot.* 5: 23 (1804); it is excellently portrayed in Martius's *Flor. brasil.* 14<sup>2</sup>: t. 57 fig. 2 (1872), as also by N. T. Burbidge in Burbidge & Gray's *Flor. Aust. Cap. Terr.* fig. 153 (1970).]

\*HERNIARIA L. (1753)

\**H. hirsuta* L. *Spec. Plant.* 1: 218 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 520 (1948); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1038 b, col. (1920).

*Vern.*: Herniaria. *Distr.*: A—also S.A.

\*POLYCARPON Læfl. ex L. (1759)

\**P. tetraphyllum* (L.) L. *Syst. Nat.* ed. 10, 2: 881 (1759).

*Mollugo tetraphylla* L. *Spec. Plant.* 1: 89 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 516 (1948); Butcher, *New ill. Brit. Flor.* 1: 465 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 108 fig. 3, col. (1909); Coste, *Flor. Franc.* 2: fig. 1330 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 152 (1970).

*Vern.*: Four-leaf Allseed. *Distr.*: ABCDEGJKMNPRTVWZ—W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

\*SPERGULA L. (1753)

Plant *glandular-hairy*; stamens 5-10; seed *subglobose*, *wingless* or almost so (widespread weed of cultivation):

\**S. arvensis* L. *Spec. Plant.* 1: 440 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 514 (1948); Ross-Craig, *Drawings Brit. Plants* 5: t. 61 (1951); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 21 A-C (1940); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 107 fig. 6, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 154 (1970).

*Vern.*: Corn Spurrey. *Distr.*: JKMNPRW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Plant *glabrous* or nearly so; stamens usually 5; seed much flattened, with a shining *white wing* as wide as the seed-body, the whole 1.5-2 mm. wide (uncommon weed of Castlemaine and Graytown districts):

\**S. pentandra* L. *Spec. Plant.* 1: 440 (1753).

*Illust.*: Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 475, col. (1913); Hegi, *Ill. Flor. Mittel-Eur.* 3: 420 fig. 621 a-e (1909); Coste, *Flor. Franc.* 1: fig. 576 (1901).

*Vern.*: Five-anthered Corn Spurrey. *Distr.*: MN.

SPERGULARIA (Pers.) J. & C. Presl (1819)

1. Robust *perennial* with *thick woody rootstock*; capsule 6-10 mm. long;

seeds dark brown, usually *all broadly winged* (leaves *fleshy*, often 1-2" long; stipules connate for half their length or more; stamens 6-10:

**S. media** (L.) C. Presl *Flor. Sicula* 161 (1826).

*Arenaria media* L. *Spec. Plant.* ed. 2, 1: 606 (1762);

*S. marginata* (DC.) Kittel *Taschenb. Flor. Dtsch.* ed. 2: 1003 (1844).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 196, col. (1968); Ross-Craig, *Drawings Brit. Plants* 5: t. 66 (1951); Coste, *Flor. Franc.* 1: fig. 581 (1901), as *S. marginata*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 108 fig. 2, col. (1909), as *S. marginata*.

*Vern.*: Coast Sand-spurrey. *Distr.*: ABCDEJKLMNPWZ—also S.A., Tas., N.Z.

—Annual or biennial with *slender tap-root*; capsule < 6 mm. long; seeds *wingless* (or sometimes with narrow arose wing) 2

2. Leaves *grey-green*, densely fascicled; petals uniformly *pink*; stamens 6-10 (stipules connate for much < half their length; capsule 4-5 mm. long; seeds wingless):

**S. rubra** (L.) J. & C. Presl *Flor. Cech.* 94 (1819).

*Arenaria rubra* L. *Spec. Plant.* 1: 423 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 515 (1948); Ross-Craig, *Drawings Brit. Plants* 5: t. 62 (1951); Leigh & Mulham, *Pastoral Plants Riverine Plain* 78, col. (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 155 (1970).

*Vern.*: Red Sand-spurrey. *Distr.*: ABCEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T. Qd, Cent. Aust., N.Z.

—Leaves *bright or yellowish-green*, hardly fascicled; petals often partly or wholly *white*; stamens 3-5 3

3. Stipules connate for  $\pm$  half their length; capsule *ovoid*, 3-6 mm. long; seeds *pale brown*, sometimes narrowly winged (coastal plant):

\***S. marina** (L.) Griseb. *Spicil. Flor. Rumel.* 1: 213 (1843).

*Arenaria rubra* var. *marina* L. *Spec. Plant.* 1: 423 (1753);

*S. salina* J. & C. Presl *Flor. Cech.* 95 (1819).

*Illust.*: Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 477 b, col. (1913); Gubb, *Flor. Sahar.* t. 106 (1913).

*Vern.*: Salt Sand-spurrey. *Distr.*: P (Geelong district)—also S.A., Tas.

—Stipules connate for much < half their length; capsule *subglobose*, < 3 mm. long; seeds *dark brown*, *always wingless* (inland plant):

**S. diandra** (Guss.) Boiss. *Flor. orient.* 1: 733 (1867).

*Arenaria diandra* Guss. *Flor. Siculae Prodr.* 1: 515 (1827).

*Illust.*: Gubb, *Flor. Sahar.* t. 105 (1913).

*Vern.*: Lesser Sand-spurrey. *Distr.*: ABCM—also S.A.

[Seeds are usually darkly and minutely papillate or echinulate, but may vary to almost smooth. A smooth-seeded form occurs at Lochiel salt lake (near Dimboola) and is probably referable to the var. *leiosperma* (Bge.) M. Popov.]

## Subfamily ALSINOIDEÆ

## \*ARENARIA L. (1753)

Expanded flowers 3-5 mm. diam.; sepals *lanceolate*, often acuminate; capsule shortly cylindro-conic and *straight-sided*; seeds 0.3-0.5 mm. wide (leaves ovate-acuminate,  $\pm$  hairy, 2-8 mm. long; branches very slender and diffuse):

\**A. leptoclados* (Reichenb.) Guss. *Flor. Siculæ Synops.* 2: 824 (1845).

*A. serpyllifolia* L. var. *leptoclados* Reichenb. *Icon. Flor. germ.* 5: 32, t. 216 fig. 4941 b (1841).

*Illust.*: Reichenbach (*l.c.*); Ross-Craig, *Drawings Brit. Plants* 5: t. 43 (1951); Burbidge, *Flor. Aust. Cap. Terr.* fig. 151 (1970).

*Vern.*: Lesser Thyme-leaved Sandwort. *Distr.*: NPTVW—also S.A., A.C.T.

Expanded flowers 5-8 mm. diam.; sepals *ovate-lanceolate*, relatively broad; capsule subovoid, *with curving sides* and distinctly *swollen at base*; seeds 0.5-0.7 mm. wide (branches rather compact):

\**A. serpyllifolia* L. *Spec. Plant.* 1: 423 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 513 (1948); Ross-Craig, *Drawings Brit. Plants* 5: t. 42 (1951); Muenscher, *Weeds* 235 (1947); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 107 fig. 1, col. (1909).

*Vern.*: Thyme-leaved Sandwort. *Distr.*: E (known with certainty only from Tyrendarra near Portland, Nov. 1951)—also W.A., S.A., Tas., N.S.W., N.Z.

## STELLARIA L. (1753)

1. Leaves broadest well *above the base*, at least the lower ones *petiolate* 5  
Leaves broadest *at or near the base*, narrow-lanceolate to linear, *all* 2  
*sessile*; petals present
2. Plant a glabrous *annual*; leaves *narrow-linear*, subterete, chiefly *basal*;  
flowers 3 mm. long, on filiform pedicels, *numerous* in branching  
cymes; petals < half the length of sepals; stamens 3-5; styles < 1 mm.  
long:

*S. filiformis* (Benth.) Mattf. in *Repert. Spec. nov. Regn. veg.* Beih. C 148 (1938).  
*Drymaria filiformis* Benth. *Flor. aust.* 1: 162 (1863).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 510 A (1948)—flower.

*Vern.*: Thread Starwort. *Distr.*: ABCDEHJ—also S.A.

—Plant *perennial*; leaves *narrow-lanceolate*, conspicuous along stems;  
flowers *solitary* in axils; petals as long as sepals or longer; stamens  
usually 10; styles 2-4 mm. long 3

3. Sepals and leaves rigid, *pungent-pointed*; stems sparsely *clothed with*  
*flexuose hairs*; seeds 1.5 mm. diam., bearing coarse umbrella-shaped  
tubercles (expanded flowers often 1-2 cm. wide):

*S. pungens* Brongn. *Bot. (Phan.) Voy. La Coquille* t. 78 (?1834).

*Illust.*: Brongniart (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 510 B (1948); Mass,

*Flowers aust. Alps* 51 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 150 (1970).

*Vern.*: Prickly Starwort. *Distr.*: CDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Sepals and leaves *never* pungent; stems *glabrous* (swamp herbs) 4

4. Leaves on weak *etiolated* stems, *distant*, 1-4 cm. long; sepals lanceolate, *acute*, 4-8 mm. long,  $\pm$  *equal* to petals:

*S. palustris* Ehrh. ex Retz. *Flor. Scand. Prodr.* ed. 2: 106 (1795).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 440 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 38 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 104 fig. 5 (1909).

*Vern.*: Swamp Starwort. *Distr.*: CDEGJMNRSVWZ—also S.A., Tas., N.S.W.

—Leaves on much-branched, rather short and sometimes congested stems, relatively *close*, <1 cm. long; sepals broad, *obtuse*, 2-3 mm. long, *shorter than* petals:

*S. cæspitosa* Hook. f. in Hook. *J. Bot., Lond.* 2: 411 (1840).

*Vern.*: Starwort. *Distr.*: CDEM—also S.A., Tas.

5. Stems with a *line of white hairs* along one side, between the nodes (broad-leaved annual weeds with *hairy* sepals) 7

Stems quite *glabrous and polished*; sepals *glabrous*, at least on backs, 4-6 mm. long 6

6. Small decumbent *annual*; leaves *lanceolate*; petals *absent*; seeds 8-20,  $\pm$  1 mm. diam.:

*S. multiflora* Hook. *Compan. Bot. Mag.* 1: 275 (1836).

*Vern.*: Rayless Starwort. *Distr.*: ABCDJMNPTVZ—also W.A., S.A., Tas., N.S.W.

—Long-trailing *perennial*; leaves *ovate*, in *remote* pairs; petals *present*; seeds <8, coarsely tuberculate, 1.5-2 mm. diam.:

*S. flaccida* Hook. *Compan. Bot. Mag.* 1: 275 (1836).

*Vern.*: Forest Starwort. *Distr.*: DEJKNPRSTVWZ—also Tas., N.S.W., Qd.

7. Sepals 4-7 mm. long; petals *present*; stamens 3-10; seeds 0.9-1.3 mm. diam. (leaves often >10 mm. long; fruit-stalk usually *reflexing*):

\**S. media* (L.) Cyrillo *Charact. Comment.* 36 (1784).

*Alsine media* L. *Spec. Plant.* 1: 272 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 512 (1948); Ewart, *Flor. Vict.* fig. 213 (1931); Ross-Craig, *Drawings Brit. Plants* 5: t. 35 (1951); Bailey, *Standard Cycl. Hort.* 3: fig. 3686 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 104 fig. 1 (1909).

*Vern.*: Chickweed. *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Sepals 2-3.5 mm. long; petals *absent*; stamens 1-3, rarely 5; seeds 0.6-0.8 mm. diam. (leaves usually  $m < 8$  m. long; fruit-stalk seldom *reflexed*):

\**S. pallida* (Dumort.) Piré in *Bull. Soc. bot. Belg.* 2: 49 (1863.)

*Alsine pallida* Dumort. *Flor. belg.* 109 (1827).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 437 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 36 (1951), as *S. apetala*.

*Vern.*: Lesser Chickweed. *Distr.*: HJ—also S.A., A.C.T.

\**MÆNCHIA* Ehrh. (1788)—*nom. conserv.*

\**M. erecta* (L.) P. Gærtn. et al. *Oek.-tech. Flor. Wett.* 1: 219 (1799).

*Sagina erecta* L. *Spec. Plant.* 1: 128 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 5: t. 31 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 105 fig. 7, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 148 (1970).

*Vern.*: Erect Chickweed. *Distr.*: CDHJMNPRW—also S.A., Tas., N.S.W., A.C.T.

\**CERASTIUM* L. (1753)

1. Perennial, with elongated ascending branches and open inflorescence; flowers 5-partite, large, *opening widely* to  $\pm 1$  cm. diam.; pedicels *much longer than calyx*; at least the upper floral bracts with *scarious margins* (chiefly alpine or subalpine):

\**C. fontanum* Baumg. *Enum. Stirp. Magno Transsily.* 1: 425 (1816)

subsp. *triviale* (Link) Jalas in *Arch. Soc. zool.-bot. fenn., Vanamo* 18<sup>1</sup>: 63 (1863).

*C. triviale* Link *Enum. Plant. Hort. berol.* 1: 433 (1821);

*C. vulgatum* L. *Spec. Plant.* ed. 2, 1: 627 (1762), *non* L. (1755).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 5: t. 25 (1951); Muenscher, *Weeds* 237 (1935)—both as *C. vulgatum*.

*Vern.*: Mouse-ear Chickweed. *Distr.*: HNPSVWZ—also Tas., ?N.S.W., A.C.T., Qd.

—Annual,  $\pm$  erect, without long decumbent offshoots; flowers rather small, *not opening widely*; bracts *all herbaceous* 2

2. Whole plant (but especially calyx) covered with *soft, spreading, non-glandular hairs* 2-3 mm. long; pedicels bearing *deflexed-appressed hairs*; flowers 5-partite:

\**C. illyricum* Ard. *Animadvers. Bot. Spec. Alt.* 2: 26 (1763).

*Illust.*: Coste, *Flor. Franc.* 1: fig. 565 (1901).

*Vern.*: Levantine Chickweed. *Distr.*: JMN.

—Vestiture including *glandular hairs*, much  $< 2$  mm. long; hairs on pedicels *never deflexed-appressed* 3

3. Cymes *densely clustered*, the terminal clusters remaining dense; flower 5-merous; stamens 10; fruiting pedicels *hardly longer than calyx*:

\**C. glomeratum* Thuill. *Flor. Paris* ed. 2: 226 (1799).

*C. viscosum* L. *Spec. Plant.* 1: 437 (1753)—*nom. ambig.*

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 511 (1948); Ross-Craig, *Drawings Brit.*

*Plants* 5: t. 24 (1951), as *C. viscosum*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 105 fig. 1, col. (1909).; Burbidge, *Flor. Aust. Cap. Terr.* fig. 149 (1970).  
*Vern.*: Mouse-ear Chickweed. *Distr.*: ACDEHJMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Cymes *open, lax*; flowers 4-merous; stamens 4-5; fruiting pedicels *much longer than calyx*:

\**C. diffusum* Pers. *Synops. Plant.* 1: 520 (1805).

*C. tetrandrum* Curtis *Flor. lond.* 2: t. 93 (1791)—*nom. illeg.*

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 5: t. 21 (1951), as *C. tetrandrum*; Hegi, *Ill. Flor. Mittel-Eur.* 3: 365 fig. 601 a-d (1909), as *C. tetrandrum*.  
*Vern.*: Mouse-ear Chickweed. *Distr.*: BCDJNRV.

[In Ewart's *Flor. Vict.* 492 (1931), *C. semidecandrum* L. *Spec. Plant.* 1: 438 (1753) was stated to be "common in gardens, cultivation paddocks and waste places". J. M. Black, *Flor. S. Aust.* ed. 2: 354 (1948), also admitted the species as occurring in the South-East region of his State. Since there are no Australian specimens at the Melbourne Herbarium, and the writer has failed to find this plant in Victoria, its occurrence is open to question. Previous records may be due to mis-identifications of the variable *C. diffusum*, from which *C. semidecandrum* may readily be distinguished by its almost entirely *scarious* floral bracts.]

### SAGINA L. (1753)

1. Perennial with long, *procumbent, rooting* branches, the main stem *not* flowering; leaf-tips narrowing abruptly into a *short awn*; capsule *longer than* blunt sepals; minute petals sometimes present:

*S. procumbens* L. *Spec. Plant.* 1: 128 (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 446 fig. 334 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 55 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 106 fig. 3, col. (1909).

*Vern.*: Spreading Pearlwort. *Distr.*: ABCEJKNTVZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Annuals with *ascending or erect* branches that *never* root; main stem *flowering*; capsule about *as long as* sepals; petals absent 2

2. Leaves tapering into a *distinct slender awn*; seeds tuberculate:

*S. apetala* Ard. *Animadvers. Bot. Spec. Alt.* 2: 22 (1763).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 443 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 53 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 106 fig. 2, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 147 (1970).

*Vern.*: Common Pearlwort. *Distr.*: ABCDEGHJKMNPRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Leaves  $\pm$  fleshy, *obtuse or mucronulate*, but *never* awned; seeds *papillose*:

*S. maritima* G. Don *Herb. brit. fasc.* 7: 155 (1806).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 444 fig. 333 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 52 (1951).  
*Vern.*: Sea Pearlwort. *Distr.*: JN—also S.A., Tas.

COLOBANTHUS Bartl. in C. Presl (1831)

Leaves with flattened, sometimes *obscure* mid-rib, the slender apical mucro 0.5-1 mm. long; sepals tapering into a mucro, *as long as or longer than* capsule (chiefly sandy coastal tracts, rare in alps):

*C. apetalus* (Labill.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 616 (1917).

*Spergula apetalus* Labill. *Nov. Holl. Plant. Specim.* 1: 112, t. 142 (1806).

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Coast Colobanth. *Distr.*: EKST—also S.A., Tas., N.Z.

Leaves with keeled mid-rib *evident* on under-side and prominently raised, the apical mucro <0.5 mm. long; sepals with *bluntish or indurated tips*, often very broad, always *shorter than* capsule (peaty ground in alps):

*C. affinis* (Hook.) Hook. f. *Flor. Tasm.* 1: 45 (1855).

*Spergula affinis* Hook. *Icon. Plant.* 3: t. 266 (1840).

*Illust.*: Hooker (*l.c.*); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 617, col. (1967).

*Vern.*: Alpine Colobanth. *Distr.*: SV—also N.S.W., Tas., N.Z.

[In *Flor. Vict.* 494 (1931) Ewart includes *C. benthamianus* Fenzl, with the comment "at Bogong, and rare". Melbourne Herbarium has no Victorian specimen of this moss-like cushion-plant which would appear to be confined, in Australia, to the higher Kosciusko region (N.S.W.). As a nomenclatural synonym of *C. subulatus* Hook. f. (a 4-merous plant endemic in subantarctic South America), *C. benthamianus* is untenable. The correct name for the Kosciusko species is *C. pulvinatus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 101 (1855); *C. hookeri* Cheeseman, of Auckland Is. & Campbell Id. (N.Z.), is very closely allied, but it is retained as a distinct species in H. H. Allan's *Flor. N.Z.* 213 (1961).]

\*MINUARTIA L. (1753)

\**M. hybrida* (Vill.) Schischkin in Komarov *Flor. U.R.S.S.* 6: 488 (1936).

*Arenaria hybrida* Vill. *Prosp. Hist. Plant. Dauph.* 48 (1779);

*M. tenuifolia* (L., ut *Arenaria* sp.) W. P. Hiern in *J. Bot., Lond.* 37: 321 (1899), *non* Nees ex Mart. (1814).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 5: t. 49 (1951); Butcher, *New ill. Brit. Flor.* 1: 452 fig. 343 (1961)—both as *Arenaria tenuifolia*.

*Vern.*: Fine-leaved Sandwort. *Distr.*: E (Nelson area)—also S.A.

SCLERANTHUS L. (1753)

1. Lobes of fruiting calyx *as long as or longer than* the  $\pm$  funnel-shaped tube; flowers *never* 1 or 2 together on a peduncle; stamens 2-10 3



Lobes of fruiting calyx *shorter than* the swollen tube; flowers 1 or 2 together on an *obvious, often elongated peduncle*; stamen 1 (mat-forming perennials, chiefly alpine or subalpine) 2

2. Leaves *acute*, with *serrulate margins*; fruiting peduncles *glabrous*, sometimes much <5 mm. long; flowers  $\pm$  2 mm. long, *in pairs*, subtended by *pointed ovate bracteoles*:

*S. biflorus* (Forst. & Forst. f.) Hook. f. *Flor. N.Z.* 1: 74 (1852).

*Mniarum biflorum* Forst. & Forst. f. *Charact. Gen. Plant.* 2, t. 1 (1776).

*Illust.*: Forster & Forster f. (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 49, col. (1968); Curtis, *Student's Flor. Tasm.* 1: fig. 20 (1956); Burbidge, *Flor. Aust. Cap. Terr.* fig. 156 (1970).

*Vern.*: Knewel. *Distr.*: EJRSVWZ—also Tas., N.S.W., A.C.T., Qd, N.Z.

[Alpine populations exhibit much *longer* (to 20 mm.) fruiting peduncles than those from lowland areas.]

—Leaves *obtuse but with a mucro, entire*; fruiting peduncles minutely *scabrid*, 5-15 mm. long; flower *solitary*, subtended by *truncate*,  $\pm$  square bracteoles (plant of higher alps):

*S. singuliflorus* (F. Muell.) Mattf. in *Bot. Jb.* 69: 272 (1938).

*Mniarum singuliflorum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 13 (1855);

*S. mniaroides* F. Muell. *Plants indig. Colon. Vict.* 1: 215, t. 12 (1862).

*Illust.*: Becker in Mueller (l.c.—1862); Mueller, *Key Syst. Vict. Plants* 2: fig. 33 (1886), as *S. mniaroides*.

*Vern.*: Knewel. *Distr.*: RSV—also N.S.W., ? N.G.

3. Flowers quite *sessile*, 3-5 mm. long, *in heads* on short, *scabrid*, terminal or axillary *peduncles*, often fragrant; sepals *whitish, ovate*; stamens 2 (*tufted perennial*):

*S. diander* R. Br. *Prodr. Flor. Nov. Holl.* 412 (1810).

*Vern.*: Knewel. *Distr.*: NSVWZ—also S.A., Tas., N.S.W., A.C.T.

—Flowers *subsessile or stalked*, in *sessile clusters*, *never pedunculate*; sepals green, *lanceolate to linear (annuals)* 4

4. Branches short,  $\pm$  *erect, glabrous*; leaves *rigid, pungent*; flowers *distinctly pedicellate*; stamens 2 (Mallee herb):

*S. minusculus* F. Muell. in *Vict. Nat.* 7: 66 (1890).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 10 n. 141 A-E (1965).

*Vern.*: Knewel. *Distr.*: ABCF—also S.A., N.S.W.

—Branches slender, *decumbent*,  $\pm$  *hairy*; leaves *lax, acute to obtuse*, often in fascicles; flowers *subsessile*; stamens 5-10:

\**S. annuus* L. *Spec. Plant.* 1: 406 (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 468 fig. 363 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 108 fig. 8, col. (1909); Muenscher, *Weeds* 221 (1935).  
*Vern.*: Knewel. *Distr.*: N (Trentham)—also Tas.

[*S. pungens* R. Br. *Prodr. Flor. Nov. Holl.* 412 (1810) was admitted for "N.W. Victoria, usually in sandy soil" in Ewart's *Flor. Vict.* 498 (1931), as it had been in F. Mueller's *Plants indig. Colon. Vict.* 1: 216 (1862). But Victorian specimens are lacking from the Melbourne Herbarium, and persistent endeavours by recent botanists to locate this South Australian plant in the Murray Mallee have been unsuccessful. It outwardly resembles *S. diander* in its clusters of large white flowers, but differs in the more spreading, rigidly pungent leaves and 5 conspicuous, exerted stamens.]

### Subfamily SILENOIDEÆ

#### \*SILENE L. (1753)

1. Calyx  $\pm$  hairy, not much enlarged in fruit (annual or biennial) 3  
     Calyx glabrous,  $\pm$  dilated in fruit 2
2. Perennial with large flowers; petals white, deeply bifid, 1-2 cm. long; fruiting calyx strongly net-veined, much inflated, becoming almost globular and  $\pm$  15 mm. wide; seeds wingless, acutely tuberculate (widespread weed of cultivation):

\**S. vulgaris* (Mœnch) Garcke *Flor. Nord. Mittel-Dtschl.* ed. 9: 64 (1869).  
*Behen vulgaris* Mœnch *Meth. Plant.* 709 (1794);  
*S. cucubalus* Wibel *Prim. Flor. werth.* 241 (1799).

*Illust.*: Marsden-Jones & Turrill, *Bladder Campions* tt. 4 & 5 (1957); Ross-Craig, *Drawings Brit. Plants* 5: t. 6 (1951), as *S. cucubalus*; Marsden-Jones & Turrill, *Kew Bull.* 1931: t. 6-9, pp. 126 & 129 (1931); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 99 fig. 2, col. (1909), as *S. inflata*.  
*Vern.*: Bladder Campion. *Distr.*: BCHKMNP RW—also W.A., S.A., Tas., N.S.W., N.Z.

—Annual with small flowers; petals pink, the limb  $\pm$  5 mm. long; fruiting calyx never net-veined, but with 10 vertical dark red stripes, campanulate, 6-8 mm. wide; seeds doubly winged (occasional in far N.W. Mallee):

\**S. longicaulis* Pourret ex Lag. *Gen. & Spec. Plant.* 15 (1816).

*Illust.*: Willkomm, *Icon. & Descr. Plant. Hispan.* 1: t. 44 (1852).  
*Vern.*: Portuguese Catchfly. *Distr.*: ABF.

3. Calyx conical, truncate and umbilicate at base, striated with 30 close vertical veins, the narrow acuminate teeth 5-8 mm. long (leaves linear; styles 3):

\**S. conica* L. *Spec. Plant.* 1: 418 (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 402 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 8 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: 281 (1909); Reichenbach, *Icon. Flor. germ.* 6: t. 276 fig. 5062, col. (1844).

*Vern.*: Striated Catchfly. *Distr.*: ACE—also S.A., N.Z.

—Calyx *ovoid to cylindrical*, 10-nerved, the teeth 1-5 mm. long, rarely more (leaves ovate to lanceolate or spathulate) 4

4. Calyx 15-25 mm. long on a *densely hairy* pedicel; limb of petal *white*, *deeply bifid*,  $\pm$  20 mm. long; styles 5 (uncommon *diæcious* biennial):

\**S. alba* (Mill.) E. H. L. Krause in Sturm *Dtsch. Flor.* ed. 2, 5: 98 (1901).

*Lychnis alba* Mill. *Gdnrs' Dict.* ed. 8 n. 4 (1768);

*L. dioica* L. var. *alba* O. F. Müll. *Flor. dan.* 5, fasc. 14: t. 1792 (1780).

*Illust.*: Muenscher, *Weeds* 228 (1935), as *Lychnis alba*; Ross-Craig, *Drawings Brit. Plants* 5: t. 15 (1951), as *Melandrium album*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 100 fig. 4, col. (1909), as *M. album*; Butcher, *New ill. Brit. Flor.* 1: 414 (1961), as *L. alba*.

*Vern.*: White Campion. *Distr.*: NW—also Tas., N.Z.

[The subsp. *divaricata* (Reichenb.) S. M. Walters in *Repert. Spec. nov. Regn. veg.* 69: 48 (1964) is distinguished by its *acuminate* calyx-teeth which are widely spreading (or even recurved). This also was recorded, from southern Victoria, in Ewart's *Flor. Vict.* 504 (1931)—as a species, *Lychnis divaricata* Reichenb.—but there are no confirmatory specimens at Melbourne Herbarium.]

—Calyx 8-10 mm. long, pedicel slightly hairy; limb of petal *pink*, *emarginate to shortly bifid*, 2-5 mm. long; styles 3 (*monæcious* annuals, with subsecund flowers) 5

5. Hairs of stems and calyces *long-villous*, mixed with shorter glandular hairs; fruiting calyx *ovoid to barrel-shaped*; seeds *blackish*,  $\pm$  0.8 mm. wide:

\**S. gallica* L. *Spec. Plant.* 1: 417 (1753).

*S. anglica* L. *l.c.* 1: 416 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 518 (1948); Ross-Craig, *Drawings Brit. Plants* 5: t. 9 (1951), as *S. anglica*; Ewart, *Flor. Vict.* fig. 214 (1931); Maiden, *Agric. Gaz. N.S.W.* 6: 809 (1895); Burbidge, *Flor. Aust. Cap. Terr.* fig. 158 (1970).

*Vern.*: French Catchfly. *Distr.*: ABCDEHJKMNPRTVWZ—also W.A., S.A., N.S.W., A.C.T., Qd, N.Z.

[Victorian populations are often referable to the var. *quinquevulnera* (L., *ut sp.*) Mert. & Koch, distinguished by a *reddish-purple blotch* that almost fills the lamina of each petal.]

—Hairs of stem *short* and  $\pm$  glandular, those of calyx short, sparse, *non-glandular and upwardly appressed*; fruiting calyx *oblong to cylindric*; seeds *pale*,  $\pm$  0.6 mm. wide:

\**S. nocturna* L. *Spec. Plant.* 1: 416 (1753).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 6: t. 274 fig. 5059, col. (1844).

*Vern.*: Mediterranean Catchfly. *Distr.*: BCFNW—also W.A., S.A., Tas., N.S.W.

[Other annual species of *Silene* occasionally escape from gardens, but do not

persist for long, e.g. the European *S. noctiflora* L. and *S. pendula* L. which appeared at North Geelong (1925) and Studley Park (1883) respectively. The former resembles *S. alba*, but has monœcious, 3-styled flowers, while the latter has a loose inflated calyx, tending to deflex in fruit.]

## GYPSOPHILA L. (1753)

- G. australis* (Schlechtendal) A. Gray *Bot. U.S. Explor. Exped. 1*: 112 (1855).  
*Dichoglottis australis* Schlechtendal in *Linnæa* 20: 631 (1847);  
*G. tubulosa* sens. Ewart et auctt. Aust., non (Jaub. & Spach) Boiss. (1842).

*Illust.*: Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 25 (1906), as *G. tubulosa*; Barkoudah, *Med. bot. Mus. Rijksuniv. Utrecht* n. 188: t. 16 on 149, fig. 11-18 (1962); Burbidge, *Flor. Aust. Cap. Terr.* fig. 157 (1970).

*Vern.*: Austral Chalkwort. *Distr.*: ABCJKNRSVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

[The tall, glabrous, broad-leaved, perennial *G. perfoliata* L., of S.E. Europe, may be grown occasionally in Victorian gardens; but Melbourne Herbarium lacks a spontaneous example from anywhere in Australia. There is surely no justification for Ewart's inclusion of the species in *Flor. Vict.* 500 (1931), with the misleading remark "widely spread in Victoria".]

## \*PETRORHAGIA (Ser. ex DC.) Link (1831)

[*Tunica* auctt., non Scop. (1772)]

Leaf-sheath at least twice as long as wide; stems usually shortly glandular-tomentose; limb of petal 1-2.5 mm. wide, bifid; seeds 1-1.3 mm. long, tuberculate with cylindrical papillæ; inner bracts mucronate:

- \**P. velutina* (Guss.) P. W. Ball & V. H. Heywood in *Bull. Brit. Mus. (Bot.)* 3: 166 (1964).

*Dianthus velutinus* Guss. *Plant. rar.* 166, t. 32 (1826);

*Tunica velutina* (Guss.) Fisch. & C. Mey. *Ind. Semin. petrop.* n. 6: 66 (1839-40).

*Illust.*: *Flor. Polon. Terr. adjac. Icon.* 7: t. 773 a (1962), as *Tunica velutina*.

*Vern.*: Hairy Pink. *Distr.*: ABCHJMNRTW—also S.A., Tas., N.S.W., A.C.T.

Leaf-sheath < twice as long as wide; stems glabrous or scabrid but not glandular; limb of petal 2-3.5 mm. wide, obcordate; seeds 1.3-1.9 mm. long, reticulate only; inner bracts obtuse:

- \**P. prolifera* (L.) P. W. Ball & V. H. Heywood in *Bull. Brit. Mus. (Bot.)* 3: 161 (1964).

*Dianthus prolifer* L. *Spec. Plant.* 1: 410 (1753);

*Tunica prolifera* (L.) Scop. *Flor. Carniol.* ed. 2, 1: 299 (1772).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 29, col. (1958), as *Kohlruschia prolifera*; Ross-Craig, *Drawings Brit. Plants* 5: t. 4 (1951), as *K. prolifera*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 102 fig. 1, col. (1909), as *Tunica prolifera*;

Maiden, *Agric. Gaz. N.S.W.* 28: t. opp. 328, col. (1917), as *Dianthus prolifer*.  
*Flor. Polon. Terr. adjac. Icon.* 7: t. 773 (1962), as *K. prolifera*.  
*Vern.*: Proliferous Pink. *Distr.*: CMNRSVW—also W.A., S.A., Tas., N.S.W., Qd.

**\*DIANTHUS L. (1753)**

**\*D. armeria L. *Spec. Plant.* 1: 410 (1753).**

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 417 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 1 (1951); *Flor. Polon. Terr. adjac. Icon.* 7: t. 775 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 3: 321 fig. 583 f-h (1909).  
*Vern.*: Deptford Pink. *Distr.*: RSW—also N.S.W., N.Z.

**\*VACCARIA Med. (1789)**

**\*V. pyramidata Med. *Philos. Bot.* 1: 96 (1789).**

*Saponaria vaccaria L. Spec. Plant.* 1: 409 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 517 (1948), as *Saponaria segetalis*; Chambers in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 96 (1958); Maiden, *Weeds N.S.W.* 45 (1920), as *S. vaccaria*; Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 101 fig. 5, col. (1909); *Curtis's bot. Mag.* 49: t. 2290, col. (1822), as *S. vaccaria*.  
*Vern.*: Cow Soapwort. *Distr.*: ABCH—also W.A., S.A., N.S.W., Qd.

[Although the name *V. pyramidata* was adopted by A. O. Chater in *Flora Europæa* 1: 186 (1964), H. J. Eichler in *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 144 (1965) has taken up *V. parviflora* Moench (1794), with the remark that the former name of F. C. Medikus is illegitimate. He subsequently changed his opinion in "Corrigenda & Addenda to the Supplement" (1966), reverting to the name *V. pyramidata*.]

**\*SAPONARIA L. (1753)**

**\*S. officinalis L. *Spec. Plant.* 1: 408 (1753).**

*Illust.*: Butcher, *New ill. Brit. Flor.* 1: 423 (1961); Ross-Craig, *Drawings Brit. Plants* 5: t. 5 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 103 fig. 4, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 159 (1970).  
*Vern.*: Soapwort. *Distr.*: RVW—also N.S.W., A.C.T.

[The European *Lychnis coronaria* (L.) Desr., Rose Campion, is much grown in Victorian gardens, seeds freely and sometimes escapes, but can hardly be regarded as naturalized anywhere; it is also recorded as a garden escape in S.A., N.S.W. and N.Z. This short-lived perennial, 1-3 ft. high, is densely white-villous and has showy magenta flowers about 1" wide. In his *Flor. Vict.* 504 (1931) Ewart admits *Agrostemma githago* L. (Corn Cockle) as "widely distributed in Victoria", but there are no Victorian specimens (other than garden-grown) at Melbourne Herbarium, and the writer has never observed a spontaneous occurrence in the State. This Eurasian annual herb differs from *Lychnis* in its very long foliaceous calyx-teeth and is reported as an occasional weed of cornfields in N.S.W., Tas. and N.Z.]

Family CABOMBACEÆ

BRASENIA Schreb. (1789)

**B. schreberi** J. F. Gmel. *Syst. Nat.* 2: 853 (1791).

*B. purpurea* (Michx., ut *Hydropeltis* sp.) Caspary in Engler & Prantl *Natürl. PflFam.* III 2: 6 (1890).

*Illust.*: Williamson, *Vict. Nat.* 44: 327 fig. 3 (Apr. 1928); Reinholtz in Mason, *Flor. Marshes Calif.* fig. 229 (1957).

*Vern.*: Water-shield. *Distr.*: MRV—also N.S.W.

[The European Yellow Water-lily or "Brandy-bottle", *Nuphar lutea* (L.) Sibth. & Sm. *Flor. græc. Prodr.* 1: 361 (1809), belongs to the related family *Nymphæaceæ*. This aquatic has become an intractable weed over several acres of the large lake in the Royal Botanic Gardens, Melbourne, resisting all attempts at eradication. Its large, broadly elliptical, floating leaves overlap and often exceed 1 ft. in length. The bright yellow globular flowers (2-3" wide) rise above the water on long stout stalks, while the flask-shaped fruits (1.5-2" long) split irregularly at maturity.]

Family RANUNCULACEÆ

1. Leaves *opposite*; achenes tipped by long, *persistent plumose styles* (woody climber with 4 petaloid sepals but *no corolla*) *Clematis* (p. 145)  
Leaves *alternate or whorled*; styles *never plumose* (small herbs) 2
2. Petals *absent*, but the long white or pink sepals petaloid; fruit a star-like head of 5-10 *follicles* on fleshy peduncle; leaf simple, except for 2 *inturned basal lobes* (springs in alpine herb fields, often flowering against edge of snowdrifts) *Caltha* (p. 146)  
Petals *present*, but sometimes reduced or deciduous; fruit a head of *numerous achenes* 3
3. Achenes in a *globular head or short spike*; petals *yellow or white*, with *nectary-pockets* at base (leaves various) *Ranunculus* (p. 147)  
Achenes in a *short spike*; petals *red*, *without* nectaries but with a *dark blotch* at base; leaves finely divided (annual crop & pasture weed of Mallee) *\*Adonis* (p. 146)  
Achenes 200-300 in a very *long slender spike*; petals very small and pale; sepals *spurred* at base; leaves radical, linear (small, widely spread annual) *Myosurus* (p. 156)

CLEMATIS L. (1753)

1. Leaves 2-3 *times* ternate, the segments *obtuse* and <1 cm. wide; sepals dingy *cream or greenish*,  $\pm$  12-20 mm. long; anthers *without* terminal appendages; plumose awn of achene 3-4 cm. long:

**C. microphylla** DC. *Regn. veg. Syst. nat.* 1: 147 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 210, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 521 A-B (1948); Ewart, *Flor. Vict.*

fig. 216 (1931); Fitch in Hooker f., *Flor. Tasm. 1*: t. 1, col. (1855), as *C. linearifolia*.

*Vern.*: Small-leaved Clematis. *Distr.*: ABCDEFGHJKMNPTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Leaves *simple to once ternate*, rarely divided again, the leaflets  $\pm$  *acute* and 1 cm. wide or more; sepals almost *white*; anthers *appendiculate* 2

2. Leaflets *shining, entire*; sepals  $\pm$  15 mm. long; anther-appendage *obtuse, minute*, <0.5 mm. long; plumose awns of achenes 3-4 cm. long (eastern climber, chiefly of jungles):

*C. glycinoides* DC. *Regn. veg. Syst. nat. 1*: 145 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 484, col. (1968); Hart, *Vict. Nat.* 40: t. 9 (Oct. 1923).

*Vern.*: Forest Clematis. *Distr.*: STVWZ—also N.S.W., Qd.

—Leaflets normally *dull*, often *toothed* and purplish beneath; sepals usually 20-30 mm. long; anther-appendage *subulate* or almost *acicular*, 1 mm. long or more; awns of achenes usually 2-3 cm. long (wide-spread gully vine):

*C. aristata* R. Br. ex DC. *Regn. veg. Syst. nat. 1*: 147 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 424, col. (1968); Rosser, *Wildflowers Vict.* 11, col. (1967); Ewart, *Flor. Vict.* fig. 217 (1931); Galbraith, *Wildflowers Vict.* ed. 3: t. 44 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 162 A (1970).

*Vern.*: Australian Clematis. *Distr.*: CDEJKMNPRSTVWZ—also W.A., Tas., N.S.W., A.C.T., Qd.

·[Among several variants in Victoria, the more noteworthy are var. *blanda* (Hook., *ut sp.*) Benth. *Flor. aust. 1*: 6 (1863), a coastal plant with usually smaller, often *twice ternate* leaflets and glabrous flowers, and var. *dennisæ* W. R. Guilfoyle in *Vict. Nat.* 15: 97 (1898) from damp forests of the eastern highlands near Healesville etc. The latter is distinguished by its long *coarsely dentate* leaves and strikingly *salmon-red* filaments, with anther-appendages manifestly longer than in other forms; it was beautifully illustrated in colour by J. N. Fitch in *Curtis's bot. Mag.* 137: t. 8367 (1911). Another form, from mountain forest near Lorne, differs in its broad very *lustrous* leaves (2.3  $\times$  1.1-1.5") and pure white flowers with constantly narrower sepals (ratio of 6.8:1), while an unusually pubescent form occurs in the forests around Mt. Elizabeth, E. Gippsland.]

### ·CALTHA L. (1753)

*C. introloba* F. Muell. in *Trans. phil. Soc. Vict. 1*: 98 (1855).

*Illust.*: Mass, *Flowers aust. Alps* 31 (1967).

*Vern.*: Alpine Marsh-marigold. *Distr.*: RSVW—also N.S.W.

### \*ADONIS L. (1753)

\**A. æstivalis* L. *Spec. Plant.* ed. 2, 1: 771 (1762),

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 121, col., & p. 599 (1909); Coste, *Flor. Franc.* 1: fig. 52 (1901); Reichenbach, *Icon. Flor. germ.* 3: t. 24, col. (1838-39); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 25, col. (1912).  
*Vern.*: Pheasant's-eye Adonis. *Distr.*: BC.

RANUNCULUS L. (1753)

1. Aquatic plant, the submerged leaves divided into numerous fine segments not lying in one plane; petals white, small (stamens 5-15; achenes almost beakless, ovoid, with several transverse wrinkles, 1-2 mm. long):

*R. trichophyllus* Chaix in Vill. *Hist. Plant. Dauph.* 1: 335 (1786).

*R. aquatilis* sens. Ewart *Flor. Vict.* 511 (1931), atque auctt. plur., non L. (1753).

*Illust.*: Williamson, *Vict. Nat.* 44: 330, fig. 1 (1928); Ross-Craig, *Drawings Brit. Plants* 1: t. 13 (1948); Strudwick, *Further Ill. Brit. Plants* 11 (1930), also in Butcher, *New ill. Brit. Flor.* 1: 215 (1961); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 35 c, col. (1912); Coste, *Flor. Franc.* 1: fig. 9 (1901).

*Vern.*: Water Buttercup (Water Fennel). *Distr.*: Swamps, lagoons and river-sides almost throughout Victoria, but not common (e.g. Darlot's Ck near Portland, Grampians, Wimmera, Murray R. between Kerang and Swan Hill, Ballarat, Hawkesdale, Bacchus Marsh, Queenscliff, Wulgulmerang and Limestone Ck at source of Murray); also N.S.W., S.A., Tas., S. Afr. and widespread in the Northern Hemisphere [the closely related European *R. fluitans* Lam. is recorded as naturalized in New Zealand].

[In his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 147 (1965), HJ. Eichler refers this species to a distinct genus, as *Batrachium trichophyllum* (Chaix) Bosch; but, in *Flora Europæa* 1: 237 (1964), C. D. K. Cook has relegated *Batrachium* to subgeneric rank under *Ranunculus*.]

—Terrestrial or marsh plants; if in water, then either the leaves not finely divided or with segments in one plane; petals yellow (except in *R. millanii*, which has few leaf-segments and all in one plane) 2

2. Leaves pinnately lobed or divided into numerous narrow-linear segments; flower large ( $\pm 1$ " wide), golden, with 5 or more petals (often purplish externally), solitary on a stout hairy peduncle; achenes with short straight beaks (alpine plant):

*R. gunnianus* Hook. *J. Bot., Lond.* 1: 244, t. 133 (1834).

*Illust.*: Hooker (l.c.); Rodway, *Tasm. Flor.* t. opp. 6 (1903).

*Vern.*: Gunn's Alpine Buttercup (Tufted Buttercup). *Distr.*: Not uncommon in alpine bog and herbfield formations at 5-6000 ft. alt., extending also to grassland and subalpine woodland dominated by *Eucalyptus pauciflora* var. *alpina* above 4500 ft. (Bogong High Plains, Mts. Bogong, Fainter, Hotham, Buffalo, Buller, Howitt, Wellington & Baw Baw); N.S.W., Tas.

—Leaves otherwise or, if with many narrow lobes, then orbicular and beaks of the achenes arched 3



3. Achenes 70-100 in an *elongated oblong head*, glabrous,  $\pm$  rotund,  $\pm$  1 mm. long; petals no longer than sepals (luxuriant glabrous and poisonous herb with many-flowered leafy panicle and slightly reflexed sepals):

\**R. sceleratus* L. *Spec. Plant.* 1: 551 (1753).

*Illust.*: Maiden, *Weeds N.S.W.* t. opp. 46, col. (1920); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 238 (1957); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 10 A-C (1940); Long in Butcher, *New ill. Brit. Flor.* 1: 208 (1961); Ross-Craig, *Drawings Brit. Plants* 1: t. 23 (1948); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 119 fig. 5, col. (1912); Coste, *Flor. Franc.* 1: fig. 27 (1901).

*Vern.*: Celery Buttercup. *Distr.*: Indigenous to Europe; introduced into N. Amer., N.Z., N.S.W., Qd, Tas. and Victoria (Wallan, Trafalgar, Bairnsdale, Newmerella, Orbost and Omeo districts, Lake Moodemere near Rutherglen—usually on mud and uncommon).

—Achenes in a more or less *spherical head* 4

4. *Annual* plants; achenes with *spines, tubercles or hooked hairs* (sometimes quite smooth and flattened in forms of *R. pumilio* and *R. sardous*) 17  
*Perennial* plants; achenes *glabrous* 5  
 5. Plants of *stoloniferous habit* 13  
 Plants *tufted*, without stolons or runners 6  
 6. Leaves *spathulate*, often on long slender petioles, *entire* or shortly trifid toward apex, with long loose rigidly spreading hairs above and short, dense, *appressed*, sericeous ones beneath (or all hairs coarse, *appressed and shining*); achenes with stout, almost *straight* beaks (alpine plant):

*R. muelleri* Benth. *Flor. aust.* 1: 13 (1863).

*Illust.*: Briggs, *Proc. Linn. Soc. N.S.W.* 84: 317 fig. 62 & 64-67 (1960).

*Vern.*: Felted Buttercup. *Distr.*: Alpine grassland and herbfield formations, extending both into subalpine woodland (above 4500 ft.) and on to the feldmark formation of highest alps, to above 6000 ft. (Flourbag near head of Victoria R., Bogong High Plains, Mt. Bogong); also N.S.W. (Kosciusko region).

[*R. victoriensis* B. G. Briggs in *Proc. Linn. Soc. N.S.W.* 84: 314, 312 fig. 55-61 (1960), from the Bogong High Plains, is presumed to be a stabilized hybrid involving *R. muelleri* and *R. eichleranus* B. G. Briggs l.c. 313 (1960). It departs from typical *R. muelleri* in its usually larger stature (to 10" high), more deeply toothed leaves (seldom quite entire), distinct oblong nectary-lobe and more arched achenial beaks. *R. victoriensis* is very abundant over the Bogong High Plains, where replacing *R. muelleri* in most areas.]

—Leaves variously *incised*, the hairs *not* or rarely closely appressed (*never* sericeous) 7

7. Plants *low, matted*, with few very *narrow glabrous* leaf segments; petals *white or pale cream* (nectary a small semilunar lobeless pocket at lower quarter of petal; beak of achene hooked but very short, 0.5 mm. long or less):

*R. millanii* F. Muell. in *Hook. J. Bot. Kew Gdns Misc.* 7: 358 (1855).

*Illust.*: Cochrane, Fuhner, Rotherham & Willis, *Flowers & Plants Vict.* t. 503, col. (1968); Melville, *Kew Bull.* 1955: 207 fig. 12 (1955); Briggs, *Proc. Linn. Soc. N.S.W.* 84: 323 fig. 87-91 (1960); Mass, *Flowers aust. Alps* [29] (1967).

*Vern.*: Dwarf Buttercup. *Distr.*: On mud edging shallow pools and watercourses of the fen formation, in high alps above 5000 ft. alt. (The Cobboras, Nunniong plateau, Davey's Plain above Tom Groggin, Bogong High Plains, Mts. Buffalo, Howitt & Wellington); also N.S.W., A.C.T., Tas.

—Plants with scapes much exceeding 2", or leaves very hairy; petals *bright yellow* 8

8. Leaves *few*, often finely bipinnatisect; stems slender, bearing erect *wholly appressed* hairs; roots fleshy, *almost tuberous* (achenes  $\pm$  1.5-3 mm. long, rugulose, with stout recurved, strongly hooked beak almost as long as the body):

**R. robertsonii** Benth. *Flora aust.* 1: 10 (1863).

*Illust.*: Briggs, *Proc. Linn. Soc. N.S.W.* 84: 305 fig. 17-21 (1960).

*Vern.*: Slender Buttercup. *Distr.*: Widespread in western Victoria, where locally not uncommon, favouring damp sandy flats (Glenelg R. between Casterton and the Cherry Pool, Poolaigelo, Kaniva, near Lake Albacutya, Stawell, Ararat, Grampians, Eaglehawk, Maldon district, Creswick, Melton, near You-Yangs); also S.A. (far south-east).

—Leaves usually numerous *or* with broad lobes; stems often with *spreading* hairs; roots sometimes a little fleshy, but *never* tuberiform 9

9. Leaves radical, *distinctly pinnate* (usually with 5 short broad lobed segments), bearing scattered *soft* spreading hairs; stems 1-flowered, short but elongating well beyond leaves when in fruit; achenes small (to 2.5 mm. long), with *short* beaks:

**R. pimpinellifolius** Hook. *J. Bot., Lond.* 1: 243 (1834).

*Illust.*: Briggs, *Proc. Linn. Soc. N.S.W.* 84: 309 fig. 38-42 (1960); Melville, *Kew Bull.* 1955: 198 fig. 3 (1955); Hooker, *Icon. Plant.* 3: t. 260 (1840).

*Vern.*: Bog Buttercup. *Distr.*: Restricted in Victoria to the more eastern highlands, where scattered but locally common on mud amongst mosses and sedges, in shaded boggy situations usually above 4000 ft. alt. (e.g. Mt. Buller, Bogong High Plains, Omeo district, sources of Murray R., Cobboras, Wulgulmerang); also Tas., N.S.W., A.C.T.

—Leaves *not pinnate* or, if appearing so, the stems elongated and achenes with slender hooked beaks 10

10. Flowers *small*, seldom >1.5 cm. wide; stem slender, beset with soft spreading hairs; sepals  $\pm$  *reflexed* (sometimes strongly); achenes 1.7-3 mm. long:

**R. plebeius** R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 288 (1817).

*R. hirtus* sens. Ewart *Flor. Vict.* 513 (1931), atque auctt. al., *non certe* Banks & Solander ex DC. (1817).

*Illust.*: Briggs, *Proc. Linn. Soc. N.S.W.* 84: 305 fig. 27-31 & 309 fig. 32-37 (1960), as *R. scapigerus*; Melville, *Kew Bull.* 1955: 196 fig. 2 (1955), as *R. scapigerus*.

*Vern.*: Forest Buttercup (Hairy Buttercup). *Distr.*: Forests of moister hilly districts and often shade-tolerant, ascending to alps (Mts. Cole, Alexander & Macedon, Kinglake Nat. Park, Dandenongs, Lake Mountain, Baw Baws, Wilson Prom., Dargo High Plains, Mts. Buller, Buffalo & Hotham, The Cobboras, Bonang, Bemm R., etc.); N.S.W., A.C.T., Qd, Tas.

[Barbara G. Briggs in *Proc. Linn. Soc. N.S.W.* 84: 307 (1960) recognizes *R. scapigerus* Hook. *J. Bot., Lond.* 1: 244 (1834) as distinct from *R. plebeius* by virtue of its more slender achenial beaks (1-2 mm. long and erect for the greater part). The population is frequent throughout eastern highlands of Victoria; but in this key it is embraced under a wider concept of *R. plebeius*. In *Kew Bull.* 1955: 197 (1955), R. Melville distinguishes and describes *R. scapigerus* var. *foliosus*, which has more or less branched stems, with up to 5 flowers and trifoliolate cauline leaves. This is the form characteristic of shaded forest land and hardly warrants recognition within a continuity of variation. As to the three varieties of *R. hirtus* admitted as Victorian in Ewart's *Flor. Vict.* 514 (1931), viz. *elongatus* Ewart, *gracilis* Cheeseman and *stoloniferus* T. Kirk, the first is based upon the inconstant character of stature (to 2 ft.) and cannot be maintained, while the last two are New Zealand populations from mountainous parts of the South Island—there is no evidence of their occurrence anywhere in Australia.]

—Flowers relatively large, 1.5-3 cm. wide; stem often stout; sepals erect; achenes 1.7-5 mm. long

11. Stem several-flowered, the lower hairs (at least) usually long and spreading; leaf-segments directed forward; nectary lobe broad, cuneate and truncate; achene lenticular, with slender coiled beak (widespread plant):

*R. lappaceus* Sm. in Rees *Cyclopædia* 29: sub *Ranunculus* n. 61 (1814).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 32, col. (1968); Briggs, *Proc. Linn. Soc. N.S.W.* 84: 302 fig. 5-10 (1960); Melville, *Kew Bull.* 1955: 194 fig. 1 (1955); Galbraith, *Wildflowers Vict.* t. 43 (1967); Ewart, *Flor. Vict.* fig. 218 (1931); Rosser, *Wildflowers Vict.* 55, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 161 (1970).

*Vern.*: Australian Buttercup (Common Buttercup). *Distr.*: Throughout Victoria, except in drier Mallee tracts (absent from Far North-west), and frequent from sea-level to the alps; all States except possibly W.A., also in N.Z.

[Barbara G. Briggs in *Proc. Linn. Soc. N.S.W.* 84: 304 (1960) revives the name *R. colonorum* Endl. et al. *Enum. Plant. Hueg.* 1 (1837) for all West Australian populations hitherto referred to *R. lappaceus*, their only point of departure from the latter seeming to be a tendency toward reflexed sepals.]

—As for the last, but achenes plump, turgid,  $\pm$  globular, with very thick pericarp and stoutish beak, inflorescence less branched and roots more tuberiform:

*R. pachycarpus* B. G. Briggs in *Proc. Linn. Soc. N.S.W.* 84: 301, 302 fig. 11-16 (1960).

*Illust.*: Briggs (l.c.).

*Vern.*: Thick-fruit Buttercup. *Distr.*: Scattered on damp places in open forest-land, but probably overlooked in Victoria through confusion with *R. lappaceus*

("Wimmera", Warrandyte district, Pine Mountain near Walwa in far north-east, Chiltern-Howlong road); S.A., N.S.W.

- Stem 1-flowered; nectary lobe oblong,  $\pm$  tapering (alpine plants) 12  
12. Leaf-segments directed forward; petioles, peduncles and sepals bearing only short forwardly appressed hairs (apparently endemic):

**R. eichleranus** B. G. Briggs in *Proc. Linn. Soc. N.S.W.* 84: 313 (1960).

*Vern.*: Ranunculus. *Distr.*: SV (Bogong High Plains & The Bluff 7 miles S.E. of Mt. Buller)—see note under *R. muelleri*, p. 148, concerning the hybrid *R. victoriensis*.

- Leaf-segments widely spreading; petioles, peduncles and sepals bearing long spreading hairs; beak of lenticular achene stout and strongly arched:

**R. graniticola** R. Melville in *Kew Bull.* 1955: 206, fig. 11 (1955).

*Illust.*: Melville (*l.c.*); Briggs, *Proc. Linn. Soc. N.S.W.* 84: 309 fig. 43-49 (1960).

*Vern.*: Granite Buttercup. *Distr.*: Grassy, rocky places in alpine and subalpine woodland with *Eucalyptus pauciflora* var. *alpina*, at 4500-6000 ft. alt. (Mts Buller, Howitt, Wellington & Buffalo, also Bogong High Plains where frequent); also N.S.W. (Kosciusko region) and Mts. Gingera-Franklin region of A.C.T.

[*R. ligulatus* R. Melville in *Kew Bull.* 1955: 199 (1955), described from a single Mt. Buffalo collection, seems intermediate between *R. millanii* F. Muell. and *R. graniticola*; it may represent a hybrid population, and comparable material is known from Bogong High Plains where these two species occur in close proximity.]

13. Robust, often glabrescent herb with strong epigeal stolons; petals large (5-10 mm. wide), broadly obovate; achenes with very short, stout curved beaks (leaves large, deltoid, 3-lobed, the central segment prominently stalked and 1-3" wide):

\***R. repens** L. *Spec. Plant.* 1: 554 (1753).

*Illust.*: Allan, *Bull. Dep. sci. industr. Res., N.Z.* n. 83: fig. 10 F & H (1940); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 236 (1957); Long in Butcher, *New ill. Brit. Flor.* 1: 198 (1961); Ross-Craig, *Drawings Brit. Plants* 1: t. 30 (1948); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 62, col. (1912); Coste, *Flor. Franc.* 1: fig. 44 (1901); Hegi, *Ill. Flor. Mittel-Eur.* 3: t. 120 fig. 2, col. (1912); Reichenbach, *Icon. Flor. germ.* 4: t. 20 fig. 4610, col. (1839).

*Vern.*: Creeping Buttercup. *Distr.*: Indigenous almost throughout temperate parts of the Northern Hemisphere; introduced into N.Z., Tas., S.A. and Victoria where vigorous and spreading rapidly in damp places (Creswick, Otways, Melbourne, Dandenongs, Strzelecki Ranges, Heyfield, Cabbage-tree Ck near Orbost, Ovens R. etc.).

- Rather slender herbs; stolons hypogeal; petals usually <5 mm. wide and narrow-oblong; achenes often with slender tapering beaks 14  
14. Sepals  $\pm$  hirsute on back; achenes smooth, with very short blunt beaks; petals 5, obovate (leaf-blades elliptical to lanceolate, simple, entire or slightly toothed):

\**R. flammula* L. *Spec. Plant. 1*: 548 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants 1*: t. 25 (1948).

*Vern.*: Lesser Spearwort. *Distr.*: NS (Warburton-Macclesfield region)—also N.Z.

—Sepals  $\pm$  *hirsute* on the back; achenes with 2-4 coarse and oblique or vertical *ridges* on each face (leaves *divided*) 16

—Sepals wholly *glabrous*; achenes *smooth* or finely and transversely *rugulose* (leaves *divided*) 15

15. Flowers to 1 cm. wide; petals 5-9,  $\pm$  *linear*, with lobeless crescentic nectary-bracket at about the *basal third*; stamens  $\pm$  15; body of achene  $\pm$  2 mm. long, with  $\pm$  erect slender beak (leaves highly polymorphic—from broadly trifoliate and clover-like to narrowly and repeatedly dissected):

*R. rivularis* Banks & Soland. ex DC. *Regn. Veg. Syst. nat. 1*: 270 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 259, col. (1968); Melville, *Kew Bull. 1955*: 214, fig. 17 (1955).

*Vern.*: Small River Buttercup. *Distr.*: In or near fresh water throughout the cooler parts of Victoria (e.g. Mt. Richmond near Portland, Port Fairy, Mt. Emu Ck, Axedale, Lorne, Little R. near You Yangs, Dandenong, Quail Id, Yarra, Snowy & Upper Murray Rivers, Glenaladale, Dargo); Tas., S.A., ? W.A., N.S.W., A.C.T., N.Z.

[The description under *R. rivularis* in Ewart's *Flor. Vjct.* 513 (1931) is inadequate, covering both this and the four succeeding species (*R. inundatus*, *R. papulentus*, *R. glabrifolius* and *R. collinus*). The precise differences between these closely related taxa—and several other stoloniferous native species—had not been appreciated until R. Melville's detailed revision of the group in *Kew Bull. 1955*: 193-220 (1955).]

—Flowers 1-1.5 cm. wide; petals 5-7, *oblanceolate to elliptic*, with conspicuous *basal nectary-lobe* (to 1 mm.); stamens 25-30; body of achene  $<$  2 mm. long, with reflexed beaks (leaves 2-3 times palmatisect into very narrow segments):

*R. inundatus* R. Br. ex DC. *Regn. Veg. Syst. nat. 1*: 269 (1817).

*Illust.*: Melville, *Kew Bull. 1955*: 209, fig. 13 (1955).

*Vern.*: River Buttercup. *Distr.*: In or near fresh water almost throughout Victoria, but absent from the Far N.W., often co-extensive with *R. rivularis* (e.g. Little Desert, Dimboola, Lake Burrumbete, Bacchus Marsh, Geelong, Sale, Bairnsdale, Wulgulmerang, Upper Murray R.); N.S.W., A.C.T., Qd, S.A., Tas.

—Flowers 1.5-2 cm. wide; petals 9-15, *oblanceolate to elliptic*, with short *nectarial pocket* toward base; stamens 30-40; body of achene  $\pm$  2 mm. long (leaf-blades to 2" wide, *multipalmatisect* into very numerous narrow linear segments):

*R. papulentus* R. Melville in *Kew Bull. 1955*: 210, fig. 14 (1955).

*Illust.*: Melville, *Kew Bull. 1955*: 211 fig. 14 (1955); Hope in Bailey & Gordon, *Plant. poison. & injur. to Stock* t. opp. 1 (1887), as *R. rivularis*.

*Vern.*: Large River Buttercup. *Distr.*: In freshwater lagoons and along rivers in southern Victoria (Surry R., Wannon R., Plenty R., Yarra R. near Yering, Lake King, Newmerella, Wulgulmerang); also N.S.W., A.C.T., Qd.

[Victorian populations differ from typical *R. papulentus* (Canberra district, A.C.T.) in having much *more dissected* leaves with narrow segments (<2 mm. wide) and more numerous petals (only 5-9 in the latter form).]

16. Leaves highly lustrous, varying from trifoliolate with *narrow entire lobes* to *palatisect* with toothed narrowly cuneate segments; petals 5-10; the nectary-pocket *deep*; body of achene 2.5-3 mm. long, almost rotund, coarsely undulate with 3-4 bold ridges (variable lowland plant):

*R. glabrifolius* Hook. *J. Bot., Lond.* 1: 243 (1834).

*R. incisus* Hook. f. *Flor. N.-Z.* 1: 10, t. 4 (1852).

*Illust.*: Melville, *Kew Bull.* 1955: 217 fig. 18 (1955); Hooker f. (*l.c.*).

*Vern.*: Shining Buttercup. *Distr.*: In or near fresh water in cooler western and southern parts of State where often co-extensive with *R. rivularis* and *R. inundatus* (e.g. Lower Glenelg R., Grampians, Lake Goldsmith, Mt. Emu Ck, Daylesford-Woodend district, Mt. Mercer, near You Yangs, Melbourne region, Tarrago R.); N.S.W., Tas., N.Z.

—As in the last, but leaves *always trifoliolate* with rather *broad ± glabrous* toothed segments, nectary-pocket (in lower fifth) *shallow*, and body of achene < 2.5 mm. long (often matted, alpine or subalpine plant):

*R. collinus* R. Br. ex DC. *Regn. veg. Syst. nat.* 1: 271 (1817).

*R. inconspicuus* Hook. f. *Flor. Tasm.* 1: 9, t. 2 fig. B (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 504, col. (1968); Melville, *Kew Bull.* 1955: 218 fig. 19 (1955); Fitch in Hooker f. (*l.c.*), col.

*Vern.*: Strawberry Buttercup. *Distr.*: At seepages of water and hillside soaks in subalpine woodland (e.g. Baw Baws, Mt. Useful, Bennison High Plains, Cobungra, head of Livingstone Ck, Nunniong Plateau, Wombargo Range, Bogong High Plains); Tas., N.S.W.

17. Leaves glabrous, *entire*, with elliptic laminæ (15-20 mm. long) on slender petioles; flowers small; achenes dark, *verruculose*, with very short beaks (Ballarat region):

\**R. ophioglossifolius* Vill. *Hist. Plant. Dauph.* 3: 731, t. 49 (1789).

*Illust.*: Long in Butcher, *New ill Brit. Flor.* 1: 207 (1961); Ross-Craig, *Drawings Brit. Plants* 1: t. 24 (1948); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 49, col. (1912); Coste, *Flor. Franc.* 1: fig. 23 (1901); Reichenbach, *Icon. Flor. germ.* 4: t. 21 fig. 4613, col. (1839).

*Vern.*: Snake-tongue Buttercup (Adder's-tongue Spearwort). *Distr.*: Indigenous to Eurasia and N. Africa; introduced into Victoria where localized and infrequent—at Haddon and Bald Hills near Ballarat, on heavy swampy ground.

—Leaves *lobed or dissected*

18. Slender plants with small *inconspicuous* flowers  $\pm$  5 mm. wide; sepals *not* reflexing, early deciduous; floral axis *glabrous* 20  
 Rather robust plants with *conspicuous* flowers to 15 mm. wide; sepals *reflexed*; floral axis *hairy* 19
19. Achenes 10-20, *stellately spreading*, ovate, 4-6 mm. long, with *long stout beaks* ( $\pm$  2 mm.) and conspicuous *spiny tubercles* on the disk (leaves *glabrous*,  $\pm$  shiny, the upper cuneately 3-lobed; petals *only slightly longer* than sepals):

\**R. muricatus* L. *Spec. Plant.* 1: 555 (1753).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 58, col. (1958); Black, *Flor. S. Aust.* ed. 2: fig. 522 (1948); Maiden, *Weeds N.S.W.* t. opp. 48, col. (1920); White, *Qd Agric. J.* 14: 244 t. 20 (1920); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 241 (1957); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 57, col. (1912); Coste, *Flor. Franc.* 1: fig. 30 (1901); Reichenbach, *Icon. Flor. germ.* 4: t. 22 fig. 4615, col. (1839).

*Vern.*: Sharp Buttercup (Burr or Prickle-fruit Buttercup). *Distr.*: Indigenous to the Mediterranean; introduced into Britain, S. Afr., N. & S. Amer., N.Z., Tas., N.S.W., A.C.T., Qd, S.A. and Victoria (where a frequent weed of damp ground in cooler parts—viz. CDEJKNMRSVWZ).

—Achenes 30 or more in mulberry-like clusters (*never* star-like),  $\pm$  orbicular, 2-2.5 mm. long, with *extremely short beaks* ( $<0.7$  mm. long) and *minute obscure tubercles* usually confined to the periphery of disk (leaves often with scattered hairs, the upper deeply incised into linear or oblong segments; flowers  $\pm$  15 mm. wide, the petals *twice as long* as sepals):

\**R. sardous* Crantz *Stirp. austriac.* 2: 84 (1763).

*Illust.*: Long in Butcher, *New ill. Brit. Flor.* 1: 201 (1961); Ross-Craig, *Drawings Brit. Plants* 1: t. 32 (1948); Hegi, *Ill. Flor. Mittel-Eur.* 3: fig. 690 a-c (1912); Coste, *Flor. Franc.* 1: fig. 29 (1901).

*Vern.*: Pale Hairy Buttercup. *Distr.*: Indigenous to Eurasia and N. Africa; introduced into N. Amer., N.Z., Tas. and Victoria (where apparently localized in Foster, Warragul, Bairnsdale and Marlo of Gippsland).

—As for the last, but achenial disk densely covered with *conical-hemispherical tubercles* and flowers usually  $<10$  mm. wide (petals *hardly longer* than calyx):

\**R. trilobus* Desf. *Flor. atlant.* 1: 437, t. 113 (1798).

*Illust.*: Desfontaines (*l.c.*); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: t. 11, col. (1912); Cusin & Ansberque, *Herb. Flor. Franc.* 1: t. 106 (1867).

*Vern.*: Buttercup. *Distr.*: Indigenous to the Mediterranean, Morocco, Azores & Canary Is; introduced during recent years into Victoria where known from Derinallum (Nov. 1956), Tongala (Oct. 1960) and Horsham district (Jan. 1962)—usually on swampy or irrigated land.

[In *Flor. S. Aust.* ed. 2: 363 (1948), J. M. Black admits the closely related *R. trachycarpus* Fisch. & Mey.—reduced by Aznavour (1902) to varietal rank under

*R. marginatus* Urv. Examination of ripe achenes from a Murray Bridge collection in Black's herbarium proves beyond doubt that the South Australian plant is also referable to *R. trilobus* Desf., not to *R. marginatus* var. *trachycarpus* which has larger achenes (3 mm. long) with *longer* beaks (1 mm.) and more prominent tubercles. The differences between these, and other annual buttercups of the Levant, are clearly set out in key form by P. H. Davis in *Notes R. bot. Gdn Edinb.* 23: 155-156 (1960). A probable variant of *R. trilobus*, having corollas 1-2 cm. wide, was collected at Heyfield (Nov. 1963).]

20. Plant *glabrous* or almost so; stem leaves deeply dissected and *cross-like*, but lowermost usually *entire*; flowers long-pedicellate; achenes densely clustered, rotund, very flattened and *almost papery*, 2-3 mm. wide, sometimes twisted, with rather few prominent tubercles *toward the centre* (petals minute, 1-3; stamens  $\pm$  5):

*R. pentandrus* J. M. Black in *Trans. roy. Soc. S. Aust.* 49: 272 (1925).

*Illust.*: Melville, *Kew Bull.* 1956: 281 fig. 4 (1956); Leigh & Mulham, *Pastoral Plants Riverine Plain* 79, col. (1965).

*Vern.*: Inland Buttercup. *Distr.*: Inundated places along and near Murray R. (e.g. near Kerang, Wyperfeld Nat. Park, Kulkyne Nat. Forest and Wentworth area), but probably of wider occurrence and overlooked; also inland water-courses of S.A., N.S.W. & Qd.

[The typical form of *R. pentandrus*, from far north-eastern South Australia, has *entirely smooth* achenes; Victorian and most New South Wales populations apparently belong to the var. *platycarpus* (F. Muell., ut *R. sessiliflorus* var.) Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 149 (1965), with achenes distinctly *tuberculate* toward the centre of their faces.]

—Plants *hairy*; achenes usually <2 mm. wide and neither twisted *nor* with asperities confined to a central patch 21

21. Lower leaves *much dissected*; achenes 1.5-2 mm. long, rotund and *short-beaked*, almost covered with *numerous very small* tubercles bearing curved hairs, or sometimes quite smooth:

*R. pumilio* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 271 (1817).

*Illust.*: Melville, *Kew Bull.* 1956: 284 fig. 6 (1956).

*Vern.*: Ferny Small-flower Buttercup. *Distr.*: Throughout Victoria (except alps), on moist and/or shaded ground; all States, but apparently rare in Qd.

[Populations with only 3 sepals and *entirely smooth achenes* are referable to var. *politus* R. Melville in *Kew Bull.* 1956: 285 (1956); in Victoria this variant is apparently confined to the Wimmera and Mallee, where widely distributed, and the Goulburn Valley (e.g. Numurkah).]

—Lower leaves cut into 3 *broad dentate lobes*, rarely dissected; achenes 1.5-2 mm. long, ovate, comparatively *long-beaked*, bearing rather *few* (sometimes long) scattered hooked tubercles; flowers often quite *sessile*:

*R. sessiliflorus* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 302 (1817).

*Illust.*: Melville, *Kew Bull.* 1956: 283 fig. 5 (1956).



*Vern.*: Australian Small-flower Buttercup. *Distr.*: Throughout Victoria (except alps), on moist and/or shaded ground, often co-extensive with *R. pumilio* and favouring sandy soils; all States, N.Z. (where perhaps an early introduction).

[The var. *pilulifer* (Hook., *ut sp.*) *R. Melville* in *Kew Bull.* 1956: 284 (1956) differs from the widespread typical form by having leaves 2-3 times dissected into narrow  $\pm$  linear segments; it occurs in the Little Desert and Mildura district, Vic., type being from Swan River, W.A.]

—As for the last, but lower leaves almost *rotund-cordate* and shallowly 3- to 5-lobed, achenes 2.5-3 mm. long, and the larger flowers (to 6 mm. wide) always on relatively *long stout peduncles*:

\**R. parviflorus* L. *Syst. Nat.* ed. 10: 1087 (1759).

*Illust.*: Melville, *Kew Bull.* 1956: 285 fig. 7 (1956); Butcher, *New ill. Brit. Flor.* 1: 202 (1961); Ross-Craig, *Drawings Brit. Plants* 1: t. 33 (1948); Reichenbach, *Icon. Flor. germ.* 4: t. 22 fig. 4616, col. (1839).

*Vern.*: Small-flower Buttercup. *Distr.*: Indigenous to Eurasia and N. Africa; introduced into N.Z. and Victoria (where localized and doubtfully persisting at Foster North and Eldorado near Beechworth).

[The description under *R. parviflorus* in Ewart's *Flor. Vict.* 515 (1931) applies partly to *R. pumilio*, partly to *R. sessiliflorus*, but not to the European species at all. Undoubted *R. parviflorus* does not seem to have reached Melbourne Herbarium until Oct. 1956, when it appeared simultaneously in the two localities cited above.

Eurasian *R. arvensis* L. (Corn Crowfoot) and indigenous *R. anemoneus* F. Muell. were both recorded for Victoria in Ewart's *Flor. Vict.* pp. 515 & 512 respectively (1931), the former as a "frequent" introduction, the latter from Mt. Hotham. *R. arvensis*, although recorded as naturalized in Queensland and New Zealand, is not represented among herbaria by any Victorian specimen and its occurrence in this State is most doubtful. *R. anemoneus*, a robust white-flowered perennial, is now considered endemic on Mt. Kosciusko, N.S.W., Victorian records being erroneous.]

### MYOSURUS L. (1753)

*M. minimus* L. *Spec. Plant.* 1: 284 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 523 (1948); Ross-Craig, *Drawings Brit. Plants* 1: t. 10 (1948); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 232 (1957); Leigh & Mulham, *Pastoral Plants Riverine Plain* 78, col. (1965).

*Vern.*: Mousetail. *Distr.*: ABCEHJKM—also W.A., S.A., N.S.W., Qd.

[Several Old World members of *Ranunculaceæ* are widely cultivated as garden ornamentals. These may either escape occasionally or persist on large estates, but are not truly naturalized in Victoria, notably: the renascent European perennials *Helleborus niger* L. (Common Hellebore or "Winter Rose") and *Aquilegia vulgaris* L. (Columbine or "Granny-bonnets"), the annuals *Nigella damascena* L. ("Love-in-a-Mist"), *Delphinium staphisagria* L. (Stave's-acre) and *Consolida ambigua* (L.) Ball & Heywood (Common Larkspur) which are native to the Mediterranean region. *Helleborus* has large pedate leaves, large white or pinkish regular flowers and free follicles; *Aquilegia* bears glaucescent biternate leaves, blue or reddish

regular flowers with long-spurred nectariferous petals and free follicles; *Nigella* is distinguished by its finely pinnate foliage, much dissected involucreal leaves that exceed the regular blue flowers, and *completely united* capsule-like follicles; *Delphinium* has pubescent, palmately lobed leaves, deep blue zygomorphic flowers with a conspicuous spur and 3-5 inflated follicles, while *Consolida* differs in its more finely cut palmate leaves, long-spurred flowers (blue, pink or white) and *solitary* pubescent follicle.]

### Family CERATOPHYLLACEÆ

#### CERATOPHYLLUM L. (1753)

**C. demersum** L. *Spec. Plant.* 2: 992 (1753).

*Illust.*: Williamson, *Vict. Nat.* 44: 327, fig. 4 (Apr. 1928); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 230 (1957).

*Vern.*: Common Hornwort. *Distr.*: AKWXZ—also S.A., N.S.W., Qd.

### Family WINTERACEÆ

#### DRIMYS Forst. & Forst. f. (1776)

Leaves *acute*, *thinly textured* with the veins apparent, remaining *olive-greenish* in the dried state; branchlets *smooth*; petals 4-9, strap-shaped, 5-7 mm. long; berry-like fruits *black* (tall shrub to small gully tree of 20 ft. or more):

**D. lanceolata** (Poir.) Baill. *Hist. Plant.* 1: 159 (1868).

*Winterania lanceolata* Poir. *Encycl. méth. Bot.* 8: 799 (1808).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 394, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 45 (1967); Rossiter in Ewart, *Handb. For. Trees* t. 49 (1925), as *D. aromatica*; Curtis, *Student's Flor. Tasm.* 1: fig. 8 (1956); King & Burns, *Wildflowers Tasm.* 11, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 163 A (1970).

*Vern.*: Mountain Pepper. *Distr.*: DKNPRSTVWZ—also Tas., N.S.W., A.C.T.

Leaves *obtuse*, *thick-textured* and rigid with veins usually obscured, *rubricent* and sometimes  $\pm$  glaucous in the dried state; branchlets finely *tuberculate*; petals always 2, only 2.5-4 mm. long; fruits often dark purple (alpine or subalpine shrub, rarely exceeding 5 ft. high):

**D. xerophila** Parmentier in *Bull. sci. Fr. Belg.* 27: 225-226, 299-300 (1896).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 494, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 163 B & C (1970).

*Vern.*: Alpine Pepper. *Distr.*: RSVWZ—also N.S.W., A.C.T.

[In a recent paper, "Winteraceæ of the Old World" by W. Vink in *Blumea* 18: 349-51 (1970), the southern *D. xerophila*, North Queensland *D. membranacea* F. Muell. and 30 previously recognized species from the New Guinea highlands are all swept into the circumscription of one highly polymorphic and widely dispersed species, *D. piperita* Hook. f. in *Icon. Plant.* 9: t. 896 (1852)—the type from Mt. Kinabalu in North Borneo, with 8-10 petals.]

## Family EUPOMATIACEÆ

## EUPOMATIA R. Br. (1814)

*E. laurina* R. Br. in Flinders *Voy. Terra Aust.* 2: 597, t. 2 (1814).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 50 (1925); Fitch in *Curtis's bot. Mag.* 81: t. 4848, col. (1855).

*Vern.*: Bolwarra. *Distr.*: WZ—also N.S.W., Qd.

## Family MENISPERMACEÆ

## SARCOPETALUM F. Muell. (1862)

*S. harveyanum* F. Muell. *Plants indig. Colon. Vict.* 1: 27, suppl. t. 3 (1862).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 6 (1886); Becker in Mueller, *Plants indig. Colon. Vict.* suppl. t. 3 (1862).

*Vern.*: Pearl Vine (Big-leaf Vine). *Distr.*: WZ—also N.S.W., Qd.

[The related climber *Stephania hernandifolia* (Willd.) Walp. differs from *Sarcopetalum* in its *umbellate* inflorescences with *no* staminodia in the male and only *one* carpel in the female flowers. This was listed as indigenous to Victoria in F. Mueller's *Ann. Rep. Govt Bot.* 1860-61: 17 (1861), and the record was accepted without question by Ewart, *Flor. Vict.* 517 (1931). It is now certain that Mueller obtained his specimens at Twofold Bay, N.S.W., 22 miles beyond the Victorian border—see N. A. Wakefield in *Vict. Nat.* 69: 82 (1952)—and, as no collections have ever been made in Victoria, this species should be deleted from the State's flora. Its legitimate name is now *S. japonica* (Thunb.) Miers, and Australian populations are referable to the variety *discolor* (Blume) L. L. Forman in *Kew Bull.* 1956: 56 (1957).]

## Family \*BERBERIDACEÆ

## \*BERBERIS L. (1753)

\**B. darwinii* Hook. *Icon. Plant.* 7: t. 672 (1844).

*Illust.*: Fitch in *Curtis's bot. Mag.* 77: t. 4590, col. (1851).

*Vern.*: Darwin's Barberry. *Distr.*: N (Dandenong Ranges etc.).

## Family MONIMIACEÆ

Leaves *green* beneath, slightly aromatic, *not* rigid; fruiting carpels *glabrous*, *exposed* and packed in a yellow mulberry-like head *Hedycarya* (p. 158)

Leaves *white* or *greyish* beneath, strongly spicy-aromatic, *rigid*; fruiting carpels *hairy*, *enclosed* in a *persistent cup-like* floral tube

*Atherosperma* (p. 159)

## HEDYCARYA Forst. &amp; Forst. f. (1776)

*H. angustifolia* A. Cunn. in *Ann. nat. Hist.* 1: 215 (1838).

*Illust.*: Rossiter in Ewart, *Handb. For. Trees* t. 51 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 4 (1886), as *H. cunninghamii*; Mueller, *Plants indig. Colon. Vict. suppl.* t. 2 (1862), as *H. pseudomorus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 164 (1970).

*Vern.*: Djelwuck (aborig.) or Austral Mulberry. *Distr.*: EJKNRSTVWZ—also N.S.W., A.C.T., Qd.

### ATHEROSPERMA Labill. (1806)

*A. moschatum* Labill. *Nov. Holl. Plant. Specimen.* 2: 74, t. 224 (1806).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 451, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 46 (1967); Ewart, *Flor. Vict.* fig. 219 (1931); Ewart, *Handb. For. Trees* t. 52 (1925); Curtis's *bot. Mag.* 165: new ser. t. 43 (1948); King & Burns, *Wildflowers Tasm.* 81, col. (1969).

*Vern.*: Southern Sassafras. *Distr.*: NRSTWZ—also Tas., N.S.W., Qd.

[Some recent authorities prefer to elevate the subfamily Atherospermoideæ to the rank of a distinct family *Atherospermataceæ*. *Hedycarya* would remain in the *Monimiaceæ* (sens. strict.).]

### Family LAURACEÆ

#### CASSYTHA L. (1753)

1. Plant completely *glabrous*, small, with *filiform* stems (<1 mm. thick); flowers white,  $\pm$  2 mm. long, 3-6 together in shortly stalked *umbellate clusters*; fruit narrowly *ellipsoid*, orange or red, 4-6 mm. long:

*C. glabella* R. Br. *Prodr. Flor. Nov. Holl.* 404 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 44, col. (1968); Ewart, *Flor. Vict.* fig. 220 (1931); Mueller, *Key Syst. Vict. Plants* 2: fig. 5 (1886); Bailey, *Compr. Cat. Qd Plants* 437 (1913); Mueller, *Plants indig. Colon. Vict.* t. 68 (1964/5).

*Vern.*: Slender or Tangled Dodder-laurel. *Distr.*: BCDEHJKMNPRSTWZ—also W.A., S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust.

- Plant  $\pm$  *pubescent* (at least on the inflorescence), often large and massive; flowers 3-4 mm. long, in *spikes*; fruit *globular* or  $\pm$  *obovoid*
- 2. Stems stout (1-4 mm. thick), *glabrous*; perianth with short *blackish hairs*; fruit green, *globular*, *glabrous*, 7-10 mm. diam.; inflorescence drying black:

*C. melantha* R. Br. *Prodr. Flor. Nov. Holl.* 404 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 524 F-G (1948); Ewart, *Handb. For. Trees* t. 53 A-E (1925)—seedlings; Burbidge, *Flor. Aust. Cap. Terr.* fig. 165 (1970).

*Vern.*: Coarse Dodder-laurel. *Distr.*: ABCDEFGHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, ? N. Terr.

- Stems (at least when young), perianths and fruits *pubescent*
- 3. Spikes *congested*, up to  $\pm$  1" long; fruit *smooth*, *ovoid* or *globular*, *white-pubescent*:

*C. pubescens* R. Br. *Prodr. Flor. Nov. Holl.* 404 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 524 A-E (1948); Anon., *Wild Life (Melb.)* 5: 173-175 (1943); Bailey, *Compr. Cat. Qd Plants* 437 (1913).

*Vern.*: Downy Dodder-laurel. *Distr.*: BCDEJKNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.; Qd.

—Spikes *loose*, 1-2" long, with distant flowers; fruit manifestly *ribbed*, obovoid or  $\pm$  *pear-shaped*, with dense *ferruginous* pubescence (East Gippsland plant):

*C. phæolasia* (F. Muell.) Benth. *Flor. aust.* 5: 310 (1870).

*C. paniculata* R. Br. var. *phæolasia* F. Muell. *Fragm. Phyt. Aust.* 5: 167 (1866).

*Vern.*: Rusty Dodder-laurel. *Distr.*: WZ—also N.S.W.

[In Ewart's *Flor. Vict.* 523 (1931), *C. phæolasia* is recorded from "near Melbourne on the silurian and red sand areas"—doubtless as a result of misidentification, since the species has not been observed to the west of Mitchell River near Bairnsdale.

Ewart also admits (*l.c.* 522) *C. paniculata* R. Br., with the remark "confined to N.E. Victoria, 'on the Hume River', and very rare if Victorian". The basis for this record is not known to the writer, and in Melbourne Herbarium there are no specimens of *C. paniculata* from any farther south than Port Jackson; this plant differs from *C. phæolasia* in its glabrous fruits.

The Bay Tree or Laurel of the ancients (*Laurus nobilis* L.) was frequently planted in old gardens where it sometimes persists. This small Mediterranean tree has dark green, acute, oblong, nutmeg-scented leaves (2-4" long), small greenish 4-partite flowers in condensed axillary panicles shorter than the leaves, and blackish ovoid berries about 10 mm. long.]

### Family PAPAVERACEÆ

1. Sepals *united* in a *glabrous calyptra*, seated on a rim-like *expansion* of receptacle; capsule elongated, ribbed; petals yellow to orange, satiny (occasional garden escape) \**Eschscholzia* (p. 162)  
Sepals distinct, *free* or almost so, never calyptriform, strictly *hypogynous* 2
2. Capsule *narrow-linear*, opening *lengthwise*; petals yellow (grey-scurfy coastal plant) \**Glaucium* (p. 160)  
Capsule *subglobular* to widely *cylindric-ellipsoid*, opening by *apical pores* or *valves* (annuals) 3
3. Leaves *not prickly*; capsule dehiscing by *>6 pores* below the stigmatic disk \**Papaver* (p. 161)  
Leaves and calyx *prickly*; capsule dehiscing by 4-6 apical valves \**Argemone* (p. 162)

### \**GLAUCIUM* Mill. (1754)

\**G. flavum* Crantz *Stirp. austriac.* 2: 133 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 526 (1948); Ross-Craig, *Drawings Brit. Plants* 2: t. 10 (1948); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 112, col. (1912), as *G. luteum*.  
*Vern.*: Horned Poppy. *Distr.*: NT—also S.A., Tas., N.Z.

[The related Mediterranean *G. corniculatum* (L.) Rudolph differs in its orange-red petals and distinctly *hairy pod* (which is only tuberculate in *G. flavum*). It has appeared at least twice in Victoria—Lara (Nov. 1924) and near Rainbow (Dec. 1964)—and occurs also in several inland parts of South Australia.]

## PAPAVER L. (1753)

1. Capsule *bristly*, globular to obovoid,  $\pm$  10 mm. long; petals 1-2 cm. long, red with dark spot at base (leaves hispid, finely 1- to 2-pinnatisect):

\**P. hybridum* L. *Spec. Plant.* 1: 506 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 525 (1948); Ross-Craig, *Drawings Brit. Plants* 2: t. 8 (1948); Ewart, *Flor. Vict.* fig. 221 (1931); Leigh & Mulham, *Pastoral Plants Riverine Plain* 79, col. (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 167 (1970).

*Vern.*: Rough Poppy. *Distr.*: ABCFGJMNRW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Capsule *glabrous* 2

2. Plant beset with *long bristles*; petals rather narrow, *orange to brick-red*, 1-2 cm. long; capsule barrel-shaped, 12-18 mm. long (leaves pinnatifid and coarsely serrate, each broad tooth ending in a bristle):

*P. aculeatum* Thunb. *Prodr. Plant. capens.* 92 (1800).

*Vern.*: Bristle Poppy. *Distr.*: ABCEVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

[Along the Snowy R., near the N.S.W. border at Willis, occurs a presumptive hybrid between this indigenous species and the introduced *P. somniferum*. Burbidge & Gray, *Flor. Aust. Cap. Terr.* 177 (1970) regard *P. aculeatum* as S. African.]

—Plants with relatively *short hairs* or  $\pm$  glabrous; petals red, purplish or white 3

3. Leaves *glaucous and almost glabrous*, the upper *amplexicaul*; capsule *subglobose*, large, 2-5 cm. diam. (petals white, pink or purple, with a dark spot at base):

\**P. somniferum* L. *Spec. Plant.* 1: 508 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 123, p. 34 (1913); Coste, *Flor. Franc.* 1: fig. 125 (1901); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 104, col. (1912).

*Vern.*: Opium Poppy. *Distr.*: ABN—also S.A., Tas., N.S.W., N.Z.

—Leaves *not glaucous*, manifestly *hispid*; capsule <2 cm. wide 4

4. Capsule *subglobose*, 10-15 mm. wide, with 8-14 stigmatic rays; pedicel bearing *patent hairs*; petals normally >3 cm. long, scarlet to crimson:

\**P. rhœas* L. *Spec. Plant.* 1: 507 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 525 (1948)—fr.; Ross-Craig, *Drawings Brit. Plants* 2: t. 5 (1948); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 5 c-d (1951).

*Vern.*: Field Poppy. *Distr.*: KN—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Capsule *obovoid to broadly cylindric*, <10 mm. wide, with 6-10 stigmatic rays; pedicel *appressedly hispid*; petals <3 cm. long, brick-red:

\**P. dubium* L. *Spec. Plant.* 2: 1196 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 525 (1948)—fr.; Ross-Craig, *Drawings Brit. Plants* 2: t. 6 (1948).

*Vern.*: Long-headed Poppy. *Distr.*: ACMN—also S.A., Tas., N.S.W., A.C.T., N.Z.

[The European *P. argemone* L. appeared near North Melbourne railway station in 1885, but does not seem to have persisted in Victoria. It is close to *P. hybridum*, differing in the longer narrow capsule which bears a few erect setæ on the upper half.]

### \*ARGEMONE L. (1753)

\**A. mexicana* L. *Spec. Plant.* 1: 508 (1753).

*Illust.*: Whittet, *Weeds (N.S.W. Dep. Agric.)* fig. 54 and t. 55, col. (1958); Curtis's *bot. Mag.* 7: t. 243, col. (1793); Hope in Bailey & Gordon, *Plants poison. & injur. Stock* t. opp. 3 (1887); Grosse in Maiden, *Weeds N.S.W.* 51 (1920); Gardner in Meadly, *Weeds W. Aust.* 74 col. & 76 (1965).

*Vern.*: Prickly Poppy. *Distr.*: CHMNV—also W.A., Tas., N.S.W., Qd, N.Z.

[The var. *ochroleuca* (Sweet, *ut sp.*) Lindl. in *Edward's bot. Reg.* 16: t. 1343 (1830) differs in having whitish flowers, and is also present in Victoria—at Sunbury etc. It is illustrated by Burbidge in *Flor. Aust. Cap. Terr.* fig. 169 (1970).

The annual Californian Poppy, *Eschscholzia californica* Cham., sometimes escapes from cultivation (e.g. around Melbourne, Maldon etc.), but does not re-seed for more than a few seasons. A wild occurrence on Loddon River flats near Baringhup (in 1910) failed to perpetuate. This glaucous plant is to be recognized by its tender, finely divided glabrous leaves, operculate calyx, large showy lustrous and usually orange petals, and long ribbed capsule.]

### Family \*FUMARIACEÆ

#### \*FUMARIA L. (1753)

[Key adapted from that by Hj. Eichler in *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 152-153 (1965)]

1. Corolla 5-8 mm. long; lower petal  $\pm$  *spathulate* 4  
Corolla 9-13 mm. long; lower petal *never* *spathulate* 2
2. Fruiting pedicels *recurved*, slightly exceeding bracts; corolla *creamy-white*; fruit smooth when dry (robust climber of W. districts):

\**F. capreolata* L. *Spec. Plant.* 2: 701 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 14 (1948); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 124, col. (1912).

*Vern.*: Ramping Fumitory. *Distr.*: CDEHN—also W.A., S.A., N.S.W., N.Z.

—Fruiting pedicels *straight* and ascending; corolla *pink* 3

3. Raceme *no longer than* peduncle, usually with few flowers ( $\pm$  12); spurred upper petal *dorsally* compressed; lower petal with *erect* margins; fruit *smooth* when dry:

\**F. muralis* Sond. ex Koch *Synops. Flor. germ.* ed. 2: 1017 (1845).

*Illust.*: Curtis, *Student's Flor. Tasm.* 1: 28 fig. 9 (1956); Burbidge, *Flor. Aust. Cap. Terr.* fig. 170 (1970).

*Vern.*: Fumitory. *Distr.*: CKNPX—also S.A., Tas., N.S.W., A.C.T.

—Raceme *longer than* peduncle, with 15-25 flowers; spurred upper petal *laterally* compressed; lower petal with *spreading* margins; fruit *rugose* when dry:

\**F. bastardii* Boreau in Duchartre *Rev. Bot.* 2: 359 (1847).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 16 (1948).

*Vern.*: Fumitory. *Distr.*: [Range in Victoria not known, owing to confusion with *F. officinalis* and other species]—also W.A., S.A., N.S.W., A.C.T., Qd.

4. Corolla 5-6 mm. long; sepals minute, <1.5 mm. long 6
- Corolla 6-8 (rarely 9) mm. long; sepals at least 2 mm. long 5
5. Bracts *shorter than* pedicels; fruit *truncate or emarginate* at apex; leaf-segments *flat*:

\**F. officinalis* L. *Spec. Plant.* 2: 700 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 20 (1948); Ewart, *Flor. Vict.* fig. 222 (1931).

*Vern.*: Common Fumitory. *Distr.*: [Uncertain].

—Bracts *longer than* pedicels; fruit *rounded* at apex; leaf-segments *channelled*:

\**F. densiflora* DC. *Cat. Plant. Hort. bot. monspel.* 113 (1813).

*F. micrantha* Lag. *Gen. & Spec. Plant.* 21 (1816).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 19 (1948), as *F. micrantha*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 122, col. (1912).

*Vern.*: Fumitory. *Distr.*: BCFGHJM—also S.A.

6. Leaf-segments *flat*; racemes manifestly *pedunculate*; flowers *pink*; fruiting pedicels *longer than* bracts; fruit *obtuse* (Werribee Gorge):

\**F. vaillantii* Loisel. in Desv. *J. Bot. Rédigé* 2: 358 (1809).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 21 (1948).

*Vern.*: Fumitory. *Distr.*: N.



—Leaf-segments very narrow, *channelled*; racemes *subsessile*; flowers usually *white*; fruiting pedicels  $\pm$  *equal* to bracts; fruits often  $\pm$  *apiculate*:

\**F. parviflora* Lam. *Encycl. Méth. bot.* 2: 567 (1788).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 2: t. 22 (1948); Pfenninger in Hegi, *Ill.*

*Flor. Mittel-Eur.* 4<sup>1</sup>: t. 124 fig. 6, col. (1913).

*Vern.*: Fumitory. *Distr.*: GHM—also S.A.

[Only a single *Fumaria*, *F. officinalis* L. with 3 varieties, was admitted in Ewart's *Flor. Vict.* 527 (1931). In recent years it has become apparent that several distinct species are now spontaneous in the State; but their distribution remains uncertain, through former confusion and misidentification with *F. officinalis*—a taxon that may not be represented in Victoria at all.

Ewart, *l.c.* 526 (1931), recorded *Corydalis capnoides* (L.) Pers., the name erroneously ascribed to "Wahl", as "naturalized in S. Victoria in 1925". There are no specimens at Melbourne Herbarium to substantiate the occurrence, but an *ms.* comment on a sheet suggests that this annual has been noted in the Wimmera district at Horsham, Nhill and Kaniva. The short-lived perennial *C. lutea* (L.) DC. is sometimes grown in Victorian gardens and may persist by seeding, but is not truly naturalized. These tender glabrous herbs differ from *Fumaria* in having a *capsular* fruit (not an indehiscent nut) with 2 or more seeds.]

#### Family CRUCIFERÆ [Brassicaceæ]

1. Fruit *deflexed*, of 2 segments, the upper flat and *foliaceous* (bristly Mallee annual with bipinnatisect leaves) \**Carrichtera* (p. 172)  
Fruit usually erect or nearly so, *without* any terminal foliaceous segment 2
2. Fruit dehiscent, at least 3 times as long as broad (a *siliqua*) 3  
Fruit dehiscent, <3 times as long as broad (a *silicula*) 20  
Fruit indehiscent or splitting transversely into 1- or 2-seeded particles 34
3. Siliquas ripening *beneath the ground*, glabrous, horny, few-seeded; leaves lyrate; petals no longer than sepals (small stemless annual of Mallee and drier grasslands) \**Geococcus* (p. 185)  
Siliquas ripening *in the air*; if ever horny, then the leaves not lyrate 4
4. Siliqua terminating in 2 *conspicuous horns*; plant hoary from a finely stellate indumentum \**Matthiola* (p. 183)  
Siliqua *never horned* 5
5. Petals yellow (pale- to deeply-coloured) or greenish 9  
Petals white or lilac 6
6. Robust water plant with lyrate leaves and large, hollow, angled stems \**Nasturtium* (p. 182)  
Land plants or, if growing in wet places, the stems tenuous and non-angular 7
7. Scapes quite *glabrous* or with scattered simple hairs; fruit linear \**Cardamine* (p. 180)  
Scapes hoary, with *stellate indumentum* (annuals of north-west) 8

8. Siliqua *linear*, almost *glabrous*; dsees 10-20 per loculus  
*Pachymitus* (p. 186)  
 Siliqua *fusiform*, *hairy*; seeds 3-9 (rarely 12) per loculus  
*Harmsiodoxa* (p. 185)
9. Fruit cylindrical or flattened, or <2" long; if exceeding 2" and somewhat angular, then the leaves with a large terminal segment 11  
 Fruit conspicuously *quadrangular* in transverse section, slender, beakless, 2-4" long; leaves *never* with a large terminal segment 10
10. Plant *glabrous and glaucous*; stem leaves amplexicaul  
*\*Conringia* (p. 172)  
 Plant bearing scattered *forked hairs*; stem leaves *not* amplexicaul  
*\*Erysimum* (p. 183)
11. Seeds in 2 rather distinct rows in each valve of fruit 16  
 Seeds in 1 row in each valve of fruit 12
12. Fruit *beakless*, the valves opening almost to the stigma 15  
 Fruit conspicuously *beaked* 13
13. Beak rather *short and narrow*; valves apparently *1-veined* (the lateral veins forming a network); seeds spherical, often with constrictions in pod between them  
*\*Brassica* (p. 167)  
 Beak *long, flat or swollen*; valves each with 3 or more prominent *parallel veins* 14
14. Fruiting pedicels *short, erect and appressed* to the stem; beak *swollen*; seeds *ovoid*  
*\*Hirschfeldia* (p. 169)  
 Fruiting pedicels *not* appressed; beak *flattened*; seeds *spherical*  
*\*Sinapis* (p. 169)
15. Each valve with *3 or more veins*; either the plant hairy or each valve enclosing about 40 seeds  
*\*Sisymbrium* (p. 183)  
 Each valve keeled, with a *single vein* and <30 seeds (*glabrous* plant of E. & N.E. mountains)  
*Barbarea* (p. 182)
16. Stem leaves *amplexicaul*, *glaucous, entire*; fruit erect, slender, 1-3" long (rare localized herb, at Cobungra & Mitchell R. sources)  
*Turritis* (p. 182)  
 Stem leaves *not* amplexicaul, variously *toothed or lobed* 17
17. Petals *large* ( $\pm$  8 mm. long), with *dark veins*; fruit broadly flattened, with a *long flat beak*  
*\*Eruca* (p. 170)  
 Petals *small*, not noticeably veined; fruit *without* a long flat beak 18
18. Fruit *oblong* or sausage-shaped, *contracting suddenly* at apex into the short style; valves *almost veinless* (plant of water-courses and swamps; leaves lyrate, bright green)  
*Rorippa* (p. 182)  
 Fruit *linear, tapering* into the long or short style; each valve with a *distinct dorsal vein* (plants of dryish places) 19
19. Leaves *toothed or* with broad segments; odour of crushed foliage unpleasant, foetid (cotyledons conduplicate)  
*\*Diplotaxis* (p. 170)  
 Leaves *deeply dissected* into 3 (rarely more) filiform segments; odour not marked (cotyledons incumbent)  
*Arabidella* (p. 184)
20. Septum *absent* from ovoid silicula, so that (after dehiscence) there remains an open *hoop-like frame*; petals white  
*Menkea* (p. 185)  
 Septum *present* in silicula 21

21. Fruit *dorsally* compressed (the septum across broadest diameter) 28  
 Fruit *laterally* compressed (the septum across narrowest diameter) 22
22. Seed 1 in each loculus of fruit, hanging from the apex (flowers often minute, with only 2 stamens) *Lepidium* (p. 172) 23  
 Seeds 2 or more to each loculus 23
23. Fruit *ovate-oblong to orbicular, rounded* at summit and sometimes winged 25  
 Fruit *obcordate or obovoid*, without wings and always *truncate* at the summit 24
24. Flowers *white*; valves *keeled* (fruit somewhat triangular) *Capsella* (p. 177)  
 Flowers *yellow*; valves *rounded and inflated* (ill-smelling crop weed 1-2 ft. tall) *\*Camelina* (p. 186)
25. Fruit 1-2 cm. diam., notched and *broadly winged*; style almost obsolete (Gippsland weed with amplexicaul leaves, fœtid if crushed) *\*Thlaspi* (p. 177)  
 Fruit much <1 cm. long or, if ever attaining 1 cm., then without wings and the style conspicuous 26
26. Stigma on a short but *definite style in apical notch* of the fruit; silicula usually >5 mm. long; cotyledons accumbent (uncommon hairy annual of far N.W. Mallee) *Phlegmatospermum* (p. 178)  
 Stigma *sessile*; fruit *without* an apical notch, <5 mm. long; cotyledons incumbent 27
27. Valves of fruit *keeled on the back* or narrowly winged by the mid-nerve; seeds 10-20 per fruit (*glabrous* annual) *Hymenolobus* (p. 178)  
 Valves *rounded on the back*; seeds 6-12 per fruit (somewhat *hairy*, small rare annual of central-W.) *Cuphonotus* (p. 177)
28. Petals tapering into *long points*, sometimes twisted after flowering (fruit ovoid-cylindric to globular) *Stenopetalum* (p. 179) 29  
 Petals *obtus*e 29
29. Fruit almost *circular, much flattened*, 1" diam. or more (broad-leaved plant with showy *magenta* flowers) *\*Lunaria* (p. 186) 32  
 Fruit narrow, *cylindrical to fusiform* (petals yellow, pink or white) 30  
 Fruit *ovoid or globular* (petals usually *white*) 30
30. Petals *deeply bifid*; seeds *numerous* (30 or more per fruit) *\*Erophila* (p. 180) 31  
 Petals *retuse or entire*; seeds *few* (2-12) 31
31. Annual with *stellate hairs*; staminal filaments with 1 *lateral tooth*; seeds 4-6 per loculus (hoary Mallee plant) *Alyssum* (p. 179)  
 Perennial with *forked or simple hairs*; filaments *entire*; seed 1 per loculus (occasional garden escape) *\*Lobularia* (p. 180)
32. Plant of wet places, almost *glabrous*; petals *yellow*,  $\pm$  2 mm. long (cotyledons accumbent) *Rorippa* (p. 182)  
 Plants of drier places, *stellate-hairy*; petals *white or pink* (cotyledons incumbent) 33
33. Silicula *fusiform, hairy*; testa of seed *not* noticeably reticulate, when dampened exuding mucus in the form of *slender cylinders* (annuals of orth-west) *Harmsiodoxa* (p. 185)

- Silicula usually *ellipsoid to obovoid*, almost *glabrous*; testa of seed conspicuously *reticulate*, when dampened exuding mucus as *roundish* or shortly oblong bodies (rare eastern montane perennial with woody rootstock) *Drabastrum* (p. 185)
34. Fruit longer than broad 36  
Fruit at least as broad as long 35
35. Leaves very odorous, *deeply pinnatisect*; petals *minute*; fruit of 2 nut-like, *reticulate* or *pitted* valves \**Coronopus* (p. 176)  
Leaves not strongly odorous, hoary, *sinuate-toothed* (the upper amplexicaul and almost entire); petals *white*, *conspicuous*; fruit *smooth*, *cordate* (noxious perennial weed) \**Cardaria* (p. 177)  
Leaves hardly odorous, *entire* (those along stem *sagittate*); petals *yellow*; fruit *globular*, *reticulate*, on slender pedicels (hairy annual of St Arnaud district) \**Neslia* (p. 179)
36. Fruit with only 1 or 2 segments 38  
Fruit with several segments 37
37. Petals white, lilac or yellow, *large* and veined; joints of fruit 1-seeded \**Raphanus* (p. 171)  
Petals reddish, *small*; each joint of fruit 2-seeded \**Chorispora* (p. 186)
38. Fruit *subtriangular*, 3-locular (the barren upper 2 side by side); lower chamber with 1 seed (glabrous annual of Wimmera, having almost *entire* amplexicaul leaves) \**Myagrum* (p. 178)  
Fruit of 2 superposed articles, the upper always with 1 seed (stem leaves  $\pm$  *toothed*, *not* clasping) 39
39. Petals *yellow*; upper article *globular*, ribbed, with *slender conical* beak (hairy plant; cotyledons conduplicate) \**Rapistrum* (p. 171)  
Petals *mauve* or *rosy*; upper article somewhat *4-angled*, with *broad blunt* beak (*glabrous* fleshy coastal plant; cotyledons accumbent) \**Cakile* (p. 171)

[The following arrangement of tribes and genera in the *Cruciferae* is adopted from that of O. E. Schulz in *Pflanzenfamilien* ed. 2, 17 b: 268-291 (1936).]

### Tribe BRASSICÆ

\*BRASSICA L. (1753)

1. Upper cauline leaves petiolate or sessile but *not* amplexicaul (annuals) 4  
Upper cauline leaves *amplexicaul* at base 2
2. Leaves *all glabrous* and often glaucous; sepals erect and connivent; petals 15-20 mm. long; all stamens *erect*; beak of fruit *shortly conical* (occasional biennial or perennial escape from market gardens etc.):

\**B. oleracea* L. *Spec. Plant.* 2: 667 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 47 (1949); Bostelmann in *Nat. geogr. Mag.* 96: 171, 173, 175 & 176, col. (Aug. 1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1065 a-g (1962); Poinot in *Bonnier, Flor. compl. Franc.*,

*Suisse & Belg.* 1: fig. 132, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 243, 248 & 250 (1913).

*Vern.*: Cabbage. *Distr.*: N—also N.S.W., N.Z.

—At least the lowest leaves *bristly*; sepals  $\pm$  *spreading*; outer stamens *curving outwards* at base; beak of fruit *long-tapering* (annual or biennial) 3

3. All leaves *glaucous*, the lowermost sparsely hairy; open flowers hardly overtopping the buds; petals *pale yellow*; seeds with *whitish bloom* (occasional escape from cultivation):

\**B. napus* L. *Spec. Plant.* 2: 666 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 48 (1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1065 h-i (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 133, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 131 fig. 4, col. (1913).

*Vern.*: Rape. *Distr.*: C (but widely cultivated in W. Victoria)—also Tas.

—Basal leaves *bright green*, manifestly setose; open flowers *overtopping* the buds of inflorescence; petals *bright yellow*; seeds red-brown to black, *without bloom*:

\**B. rapa* L. *Spec. Plant.* 2: 666 (1753).

*B. campestris* L. l.c.

*Illust.*: Cock, *Tasm. J. Agric.* 23: 176 fig. B (1952), as *B. campestris*; *Flor. Polon. Terr. adjac. Icon.* 9: t. 1065 j (1962), as *B. campestris*.

*Vern.*: White Turnip (Wild Turnip). *Distr.*: HJN—also W.A., Tas., N.S.W., Qd.

[Subspecies *rapa* is the cultivated White Turnip, with tuberous taproot; but spontaneous occurrences in Victoria are mostly referable to the weedy non-tuberous subsp. *sylvestris* (L.) Janchen in Janchen & Wendelberger *Kleine Flor. Wien* 55 (1953).]

4. Siliqua *appressed to stem*, much  $< 1''$  long, its beak *filiform* (1.5-3 mm.); leaves *all petiolate*; petals *bright yellow*, 7-9 mm. long (far W. areas):

\**B. nigra* (L.) W. Koch in Mert & W. Koch *Dtsch. Flor.* ed. 3, 4: 713 (1833).  
*Sinapis nigra* L. *Spec. Plant.* 2: 668 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 50 (1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1065 (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 134, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 131 fig. 3, col. (1913).

*Vern.*: Black Mustard. *Distr.*: C—also W.A., S.A., Tas., Qd.

—Siliqua  $\pm$  *erect* or widely spreading, but *never appressed*,  $\pm 1''$  long or more, its beak often attenuated but *not filiform* 5

5. Petals *small and narrow* (5.7  $\times$  1.2 mm.), pale; siliqua 1-3" long, *not constricted* between the seeds, the beak 10-20 mm. long; cauline leaves *sessile* (frequent *bristly*, annual, aggressive weed of Mallee):

\**B. tournefortii* Gouan *Ill. & Obsns Bot.* 44, t. 20 A (1773).

*Illust.*: Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 7: 422 & t. opp. 420, col. (1958); *Bull. Dep. Agric. S. Aust.* n. 406: t. opp. 53, col. (1949); Orchard, *J. Dep. Agric. S. Aust.* 50: 178 (1946) & 56: 11-12 (1952); Gardner in Meadly, *Weeds W. Aust.* 80 (col.), 81-83 (1965); Leigh & Mulham, *Pastoral Plants Riverine Plain* 81 (1965).

*Vern.*: Mediterranean Turnip. *Distr.*: ABCFH—also W.A., S.A., N.S.W., Cent. Aust.

Petals *conspicuous* (9-10 × 3-5 mm.) light yellow; siliqua 1-1.5" long, manifestly *constricted around the seeds* and appearing ± nodular, the beak only 3-6 mm. long; leaves all *petiolate* (scattered, ± *glabrous* and often glaucescent biennial or perennial with nearly *leafless flowering branches*, in Colac district):

\**B. fruticulosa* Cyrillo *Plant. rar. Neopol.* 2: 7 (1792).

*Illust.*: Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 136, col. (1912).

*Vern.*: Twiggy Turnip. *Distr.*: K.

### \**SINAPIS* L. (1753)

Upper leaves *sessile*, simple, *toothed*; siliqua bearing 8-17 dark red-brown seeds; beak cylindrical or conical, *hardly* compressed (shorter than valves):

\**S. arvensis* L. *Spec. Plant.* 2: 668 (1753).

*Brassica sinapistrum* Boiss. *Voy. bot. Espagne* 2: 39 (1839-45).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 537 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 53 (1949); Cock, *Tasm. J. Agric.* 23: 175 fig. B, 176 fig. A & C (1952); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1092 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 130 fig. 4, col. (1913), as *Brassica arvensis*.

*Vern.*: Charlock. *Distr.*: BDJMNRTW—also W.A., S.A., Tas., N.S.W., N.Z.

All leaves *petiolate* and *pinnately lobed* or cut; siliqua with <8 pale brown seeds; beak *strongly* compressed and sabre-like (at least as long as valves):

\**S. alba* L. *Spec. Plant.* 2: 668 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 54 (1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1062 a (1962); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 127, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 130 fig. 3, col. (1913).

*Vern.*: White Mustard. *Distr.*: BJMT—also Tas., A.C.T.

[The subsp. *dissecta* (Lag., *ut sp.*) Bonnier *Flor. compl. Franc., Suisse & Belg.* 1: 58 (1912) differs in its twice pinnatifid leaves and much less hairy siliques; it appeared sporadically in N.W. Victoria during Nov. 1941, but failed to become established.]

### \**HIRSCHFELDIA* Mönch (1794)

\**H. incana* (L.) Lagr.-Foss. *Flor. Tarn & Garonne* 19 (1847).

*Sinapis incana* L. *Amæn. Acad.* 4: 280 (1759);

*Brassica adpressa* (Mœnch, ut *Hirschfeldia* sp.) Boiss. *Voy. bot. Espagne* 2: 38 (1839-45).

*Illust.*: Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 137, col. (1912), as *H. adpressa*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 221 fig. 779 i-l (1913); Burbidge, *Flor. Aust. Cap. Terr.* fig. 172 (1970).

*Vern.*: Hoary Mustard. *Distr.*: NTVW—also S.A., Tas., N.S.W., A.C.T., N.Z.

### \*DIPLOTAXIS DC. (1821)

Leaves *not* in a basal rosette,  $\pm$  *glaucous and fleshy*, foetid when crushed; fruit on a pedicel of almost *equal length* (short-lived perennial with wholly glabrous stems):

\**D. tenuifolia* (L.) DC. *Regn. veg. Syst. nat.* 2: 632 (1821).

*Sisymbrium tenuifolium* L. *Amæn. Acad.* 4: 279 (1759).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 56 (1949); Frost in Orchard, *J. Dep. Agric. S. Aust.* 50: 180 (1946); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1063 (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 139, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 215 fig. 778 q-v (1913).

*Vern.*: Sand Rocket. *Distr.*: CDGKNP—also W.A., S.A., Tas., N.Z.

Leaves (at least of first season) almost confined to a *basal rosette, yellowish green and thinly textured*; fruit on a pedicel *much shorter* than the siliqua (lower part of stems usually bearing sparse stiff hairs):

\**D. muralis* (L.) DC. *Regn. veg. Syst. nat.* 2: 634 (1821).

*Sisymbrium murale* L. *Spec. Plant.* 2: 658 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 538 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 57 (1949); Orchard, *J. Dep. Agric. S. Aust.* 50: 180 (1946); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1064 (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 140, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 131 fig. 1, col. (1913).

*Vern.*: Wall Rocket. *Distr.*: ABCKP—also W.A., S.A., Tas., N.S.W., N.Z.

[Stunted plants of what appeared to be the European *D. viminea* (L.) DC. were found on shell grit at Point Lonsdale (Sept. 1949), but no other occurrences have been reported in the State. This rosulate annual differs from *D. muralis* in its smaller petals (3-4 mm. long) and *sterile* outer stamens.]

### \*ERUCA Adans. (1762-63)

\**E. vesicaria* (L.) Cav. *Descr. Plant.* 426 (1802).

*Brassica vesicaria* L. *Spec. Plant.* 2: 668 (1753).

*Illust.*: *Flor. Polon. Terr. adjac. Icon.* 9: t. 1061 a (1962); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 131, col. (1912), as *E. sativa*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 129 fig. 5 (1913), as *E. sativa*.

*Vern.*: Bladder Eruca. *Distr.*: CGN—also S.A., N.Z.

[Victorian, and South Australian, occurrences are all referable to the subsp. *sativa* (Mill., ut sp.) Thell. in Hegi, *Ill. Flor. Mittel-Eur.* 4: 201 (1918), distinguish-

able by its caducous sepals and *obtuse* anthers. As this species has appeared in only a few localities at long intervals, it can hardly be regarded as naturalized in the State.]

\**RAPHANUS* L. (1753)

Tap-root *not* tuberous; fruit manifestly *constricted* between the 3-8 seeds, *not* inflated or spongy, 3-6 mm. diam., breaking readily into *1-seeded joints*; seeds 1.5-3 mm. diam.:

\**R. raphanistrum* L. *Spec. Plant.* 2: 669 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 547 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 76 (1949); Orchard, *J. Dep. Agric. S. Aust.* 50: 177 (1946); Davey, *J. Dep. Agric. Vict.* 20: 292-293 (1922); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1066 (1962); Gardner in Meadly, *Weeds W. Aust.* 78, col. & 79 (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 171 (1970).

*Vern.*: Wild Radish. *Distr.*: ABCHJKMNPRSWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Tap-root *tuberous*, very fleshy; fruit *hardly* constricted between the 6-12 seeds, up to 15 mm. diam., *inflated*, *spongy-walled* and *not* breaking into joints, glabrous and polished; seeds  $\pm$  3 mm. diam.:

\**R. sativus* L. *Spec. Plant.* 2: 669 (1753).

*Illust.*: *Flor. Polon. Terr. adjac. Icon.* 9: t. 1066 a (1962); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 125, col. (1912).

*Vern.*: Common Radish. *Distr.*: N—also S.A., Tas., N.S.W., N.Z.

\**RAPISTRUM* Crantz (1769)

\**R. rugosum* (L.) All. *Flor. Ped.* 1: 257, t. 78 (1785).

*Myagrum rugosum* L. *Spec. Plant.* 2: 640 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 546 (1948); Clarke, *Bull. Dep. Agric. S. Aust.* n. 406: t. opp. 59, col. (1949); Orchard, *J. Dep. Agric. S. Aust.* 50: 179 (1946); Everist, *Common Weeds Farm & Pasture* fig. 95 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 4: t. 132 fig. 1, col. (1913).

*Vern.*: Giant Mustard (Turnip Weed). *Distr.*: ACJLMNP—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

*CAKILE* Mill. (1754)

Lower article of fruit 4-6 mm. wide (almost *as broad as* the upper), bearing 2 lateral  $\pm$  deflexed *humps* or *blunt horns* toward the apex; upper article 5-8 mm. wide, inflated, 4-ribbed and  $\pm$  *square* in section, with broad *membranous margins* at base:

*C. maritima* Scop. *Flor. carniol.* ed. 2, 2: 35 (1772).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 542 F (1948)—fr.; Ross-Craig, *Drawings Brit. Plants* 3: t. 75 (1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1059 (1962);



Abrams, *Ill. Flor. Pacific States* 2: fig. 2007 (1944); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 130 fig. 1, col. (1913).

*Vern.*: Sea Rocket. *Distr.*: ENPZ—also W.A., S.A., Tas., Qd, N.Z.

[Sometimes co-extensive with, but usually much commoner than, the dissected form in Victoria are populations perhaps referable to subsp. *integrifolia* (Hornem.) N. Hylander; the latter have simple,  $\pm$  spatulate, entire or irregularly dentate leaves.]

Lower article of fruit 1-3 mm. wide (*much narrower* than the upper), *devoid of lateral projections*; upper article 3-6 mm. wide, strongly flattened and *without* membranous basal margins:

**C. edentula** (Bigelow) Hook. *Flor. Bor.-Amer.* 1: 59 (1830).

*Bunias edentula* Bigelow *Flor. boston.* 157 (1814).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 545 (1948); Abrams, *Ill. Flor. Pacific States* 2: fig. 2008 on 273 (1944)—both are subsp. *californica*.

*Vern.*: Sea-Rocket. *Distr.*: EKNPTWZ—also Tas., N.S.W.

[Victorian occurrences have been identified with the subsp. *californica* (Heller, *ut sp.*, 1907) E. Hultén in *Acta Univ. lund.* 41<sup>1</sup>: 824 (1945). This taxon is characterized by "six well-developed processes and corresponding pits in the articulating surfaces between the upper and lower joints of the pods".]

#### \*CARRICHTERA DC. (1821)

\***C. annua** (L.) DC. in *Mém. Mus. Hist. nat., Paris* 7: 250 (1821).

*Vella annua* L. *Spec. Plant.* 2: 641 (1753).

*Illust.*: Prantl in *Natürl. Pflfam.* III 2: 172 & 173 (1891); Schulz in *Pflanzenreich* IV 105 (Heft 84): 4 fig. 3 B, 43 fig. 13 B-H (1923); Post & Dinsmore, *Flor. Syria, Palestine & Sinai* ed. 2, 1: 125 (1932).

*Vern.*: Ward's Weed. *Distr.*: B—also S.A., Cent. Aust.

#### \*CONRINGIA Adans. (1762-63)

\***C. orientalis** (L.) Dumort. *Flor. Belg.* 123 (1827).

*Brassica orientalis* L. *Spec. Plant.* 2: 666 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 45 (1949); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 156, col. (1912), as *Erysimum orientale*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 441 fig. 866 (1913).

*Vern.*: Treacle Mustard, Hare's Ear. *Distr.*: BCGHW—also S.A., Qd.

#### Tribe LEPIDIÆ

##### LEPIDIUM L. (1753)

1. Stem and branches manifestly covered with blunt white *papillose hairs*; leaves all toothed; petals *absent*; fruit often *purplish*, 4-6 mm. long, winged in upper half, deeply notched; seeds 1.5-2 mm. long:

*L. papillosum* F. Muell. in *Linnaea* 25: 370 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 529 G (1948)—fruit.

*Vern.*: Warty Pepper-cress. *Distr.*: ABCGM—W.A., S.A., N.S.W., Qd, Cent. Aust.

- Plants *not* papillose (or only microscopically so); leaves, petals and fruits *not* combining the above features 2
- 2. Fruit *not* winged or, if slightly so, then <4 mm. long; apical notch *minute* 7  
Fruit *broadly winged* (at least in upper part), 5 mm. long or more, usually with *deep* apical notch 3
- 3. Leaves *broad*, lanceolate to oblanceolate, all or most of them *variously toothed* to deeply divided (annuals or biennials) 6  
Leaves glabrous, *linear* and *all entire* (rarely with a few basal leaves pinnatisect)—uncommon Mallee plants 4
- 4. Petals *present*, at least as long as sepals; stamens 6; fruit with 2 spreading  $\pm$  *obtuse* lobes at summit 5  
Petals *absent*; stamens 4; fruit with 2 *acute* and connivent lobes at summit; seed 1.5-2 mm. long, narrowly winged (low annual plant):

*L. monoplocoides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 35 (1855).

*Vern.*: Winged Pepper-cress. *Distr.*: ACG—also S.A., N.S.W., Qd.

- 5. Perennial *undershrub*; leaves narrow-linear, subterete; petals white, narrow, *acute*; fruit *obovate to elliptic*; seed  $\pm$  3 mm. long, wingless:

*L. leptopetalum* (F. Muell.) F. Muell. *Plants indig. Colon. Vict.* 1: 48 (1862).  
*Monoploca leptopetala* F. Muell. in *Trans. phil. Soc. Vict.* 1: 35 (1855).

*Vern.*: Slender Pepper-cress. *Distr.*: ABF—also W.A., S.A., N.S.W.

- Small *annual*; leaves linear to narrowly oblanceolate; petals pink, broadish, *obtuse*; fruit *subrotund*; seed 2.5-3 mm. long, narrowly winged:

*L. rotundum* (Desv.) DC. *Regn. Veg. Syst. nat.* 2: 537 (1821).

*Lepia rotunda* Desv. *J. Bot., Paris* 3: 166, 181 (1814).

*Vern.*: Veined Pepper-cress. *Distr.*: A—also W.A., S.A., N.S.W., Cent. Aust.

- 6. Plant *grey-pubescent*; leaves *dentate or shortly lobed*, the upper sessile and *amplexicaul*; petals hardly exceeding calyx; fruiting pedicels *spreading* at right angles to the floral axis; fruit *vesiculose* on surface; seed 2-2.5 mm. long:

\**L. campestre* (L.) R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 88 (1812).

*Thlaspi campestre* L. *Spec. Plant.* 2: 646 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 63 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 126 fig. 5, col. (1913); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 274, col. (1912); Coste, *Flor. Franc.* 1: fig. 335 (1901).

*Vern.*: Field Cress. *Distr.*: CJNR—also Tas., N.S.W., N.Z.

—Plant *glabrous*; leaves narrowly *once or twice pinnate*, the upper sessile but *not stem-clasping*; petals twice as long as calyx; fruiting pedicels *ascending to erect*; fruit *not vesiculose*; seed  $\pm$  3 mm. long:

\**L. sativum* L. *Spec. Plant.* 2: 644 (1753).

*Illust.*: Prantl in *Natürl. PflFam.* III 2: 160 (1891); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 125 fig. 45 & 46, p. 82 fig. 752 a-d (1913); Coste, *Flor. Franc.* 1: fig. 334 (1901).

*Vern.*: Garden Cress. *Distr.*: KT (hardly naturalized anywhere)—also Tas.

7. Fruiting raceme becoming *loose* and usually *much elongated* (never subcapitate) 8

Fruiting raceme remaining *very short and dense* (almost capitate); fruit obovate, 3-4 mm. long, contracted toward the much shorter pedicel, scarcely notched (erect glabrous annual to 18" high, the radical leaves pinnatisect and cauline ones entire):

*L. fasciculatum* Thell. in *Neue Denkschr. schweiz. Ges. Naturw.* 41<sup>1</sup>: 306 (1906).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 82, col. (1965).

*Vern.*: Bundled Pepper-cress. *Distr.*: ABCFGHLM—also S.A., N.S.W.

8. Plant  $\pm$  *pubescent* or minutely papillose (rarely subglabrous, and then either the lower leaves pinnate or fruit subrotund with winged seeds 10  
Plant *glabrous* or almost so; lower leaves *lobed or serrate*, the upper remotely toothed or entire; fruit ovate to elliptic 9

9. Leaves *thick*, broad and *subamplexicaul* at base; fruit 4-6 mm. long, the style shortly *exserted*; stamens 6 (littoral plant):

*L. foliosum* Desv. *J. Bot., Paris* 3: 164, 180 (1814).

*Vern.*: Leafy Pepper-cress. *Distr.*: ENP—also W.A., S.A., Tas., N.S.W., Qd.

—Leaves *membranous*, narrowed toward base (often linear); fruit <4 mm. long, the style *sessile* in a minute notch; stamens 2, rarely 4 (petals < $\frac{1}{2}$  the length of sepals or absent):

*L. hyssopifolium* Desv. *J. Bot., Paris* 3: 164, 179 (1814).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 83 (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 177 (1970).

*Vern.*: Common Pepper-cress (Rubble Pepper-cress). *Distr.*: ACEGHJKLMNPR STWZ—also W.A., S.A., N.S.W., A.C.T., Qd.

[This and certain other related species cause an objectionable flavour in the milk of cows which feed upon them.]

10. Branches *without* spines; racemes with *many flowers*, usually elongating 12

Branchlets *ending in spines*; racemes *few-flowered*, remaining short 11

11. Fruit as long as (or longer than) the pedicel, rhombic-obovate; style *shortly exserted* beyond the minute notch:

*L. aschersonii* Thell. in *Neue Denkschr. schweiz. Ges. Naturw.* 41<sup>1</sup>: 310 (1906).  
*L. dubium* sens. Ewart (1930), J. M. Black (1948), *non* Thell. (1906).

*Vern.*: Spiny Pepper-cress. *Distr.*: DJKN.

—Fruit *shorter than* pedicel, rhombic-elliptic; style *not exserted*:

*L. dubium* Thell. in *Neue Denkschr. schweiz. Ges. Naturw.* 41<sup>1</sup>: 311 (1906).

*Vern.*: Spiny Pepper-cress. *Distr.*: JK—also ? S.A., ? N.S.W.

[A very imperfectly known entity, closely related to and perhaps merely a robust variant of *L. aschersonii*; the only collection extant is apparently that of the type (on basalt near Mt. Elephant, Vic., 1874).]

12. Leaves  $\pm$  *pubescent*, the margins always bearing short, triangular, tooth-like hairs; fruit and seeds *wingless* 14  
 Leaves *glabrous* or with a few fine hairs (e.g. on margins of petiole);  
 fruit subrotund,  $\pm$  *winged* above 13
13. Stems *decumbent*, <4" high, bearing *copious fine reflexed hairs*; fruits crowded, on erect hairy pedicels <3 mm. long; seed *wingless*:

\**L. pubescens* Desv. *J. Bot., Paris* 3: 165, 180 (1814).

*Illust.*: Bettfreund, *Flor. argent.* 2: t. 78 (1900).

*Vern.*: Matted Pepper-cress. *Distr.*: EJS.

—Stems *erect*, >4" high, *minutely pubescent* or subglabrous; fruits in long  $\pm$  *open racemes*, on spreading subglabrous pedicels >3 mm. long; seed narrowly *winged*; cauline leaves *toothed or entire*; petals *longer than* sepals; stigma on a very *short* style:

\**L. virginicum* L. *Spec. Plant.* 2: 645 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 2: fig. 1979 (1944); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 279, col. (1912); Coste, *Flor. Franc.* 1: fig. 344 (1901).

*Vern.*: Virginian Pepper-cress. *Distr.*: HMNR—also Qd, N.Z.

—As for the last, but leaves *all deeply dissected*, petals *shorter than* sepals, stigma *subsessile* at bottom of notch and fruiting pedicels only 2-3 mm. long (Greater Melbourne area, rare):

\**L. bonariense* L. *Spec. Plant.* 2: 645 (1753).

*Illust.*: Hayward & Druce, *Advent. Flor. Tweedside* 22 (1919).

*Vern.*: Pepper-cress. *Distr.*: N—also N.S.W., A.C.T., Qd, N.Z.

14. Lower leaves *pinnate to lyrate-pinnatifid*, with large terminal segment 5-20 mm. long; upper leaves shortly *petiolate*, hardly auriculate; fruiting pedicels *spreading* at right angles to the floral axis (lax coastal he, b):

*L. halmaturinum* J. M. Black in *Trans. roy. Soc. S. Aust.* 62: 354, t. 20 fig. 1 (1938).

*Vern.*: Pepper-cress. *Distr.*: EN.

—Lower leaves *not* pinnate or pinnatifid, without large terminal segment; upper leaves *sessile*, often auriculate at base; fruiting pedicels *ascending* 15

15. Branches *very pubescent* (with spreading cylindrical hairs), terete; upper leaves linear to lanceolate; fruit *subrotund*; style *much shorter than* and included within the notch:

*L. sp.*

*Vern.*: Pepper-cress. *Distr.*: EN (apparently endemic).

—Branches  $\pm$  pubescent (with spreading cylindrical hairs), often slightly angular; upper leaves *linear to lanceolate*; fruit *rhombic-elliptic*; style *equal to or slightly shorter than* the very minute notch:

*L. desvauxii* Thell. in *Neue Denkschr. schweiz. Ges. Naturw.* 41<sup>1</sup>: 307 (1906).

*Vern.*: Bushy Pepper-cress. *Distr.*: J.

—Branched (and leaves) *scabrous* with scattered, short, often 2-lobed or deflexed hairs; all the leaves dispersed, subspathulate to *narrow-cuneate* and boldly toothed toward apex; fruit as in the last (plant of sandy coasts, on Wilson Prom.):

*L. pratervisum* Domin in *Repert. Spec. nov. Regn. veg.* 11: 199 (1912).

*Illust.*: Garnet, *Wildflowers Wilson's Prom.* fig. 438 (1971).

*Vern.*: Pepper-cress. *Distr.*: T (Oberon & Norman Bays)—also Tas.

[Several alien species of *Lepidium* have been occasional introductions, but are apparently not established or spreading in any district, e.g.: the Western Asiatic annual *L. aucheri* Boiss., with erect complanate fruiting pedicels, manifest petals and winged fruits, has appeared as a transitory weed in flax crops; Mediterranean perennial *L. graminifolium* L., with broad white petals, small suberect pointed notchless fruits and exserted styles, was collected at Kensington (1937).]

### \*CORONOPUS Boehm. (1760)

Fruiting raceme *longer than* leaf; silicula vertically *bilobed* or deeply emarginate,  $\pm 1.5 \times 2.3$  mm., separating when ripe into 2 wrinkled ovoid nutlets:

\**C. didymus* (L.) Sm. *Flor. Brit.* 2: 691 (1800-04).

*Lepidium didymum* L. *Mant. Plant.* 1: 92 (1767).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 544 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 60 (1949); Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 41 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 94 (1913); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 281, col. (1912), as *Senebiera didyma*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 179 (1970).

*Vern.*: Lesser Swine's-cress. *Distr.*: BCJMNPRW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

Fruiting raceme *shorter than* leaf, with crowded fruits; silicula almost reniform, rounded at apex, 2.3 × 3.4 mm., *not* separating into nutlets:

\**C. squamatus* (Forsk.) Aschers. *Flor. Brand.* 62 (1864).

*Lepidium squamatum* Forsk. *Flor. Aegypt.-Arab.* 117 (1775);

*C. verrucarius* (Garsault, ut *Nasturtium* sp.) Muschl. & Thell. ex Janchen in *Mitt. Naturw. Ver. Univ. Wien* 5: 92 (1907).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 59 (1949); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 280, col. (1912), as *Senebiera Coronopus*; Coste, *Flor. Franc.* 1: fig. 346 (1901), as *Senebiera Coronopus*.

*Vern.*: Swine's-cress. *Distr.*: EMNP—also S.A., Tas.

#### \*CARDARIA Desv. (1814)

\**C. draba* (L.) Desv. in *J. Bot., Paris* 3: 163 (1814).

*Lepidium draba* L. *Spec. Plant.* 2: 645 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 540 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 65 (1949), as *Lepidium draba*; Wall in Orchard, *J. Dep. Agric. S. Aust.* 54: 493 (1951); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 4, 3: 139 & t. opp. 136, col. (1962); Gardner in Meadly, *Weeds W. Aust.* 84 (col.), 86 (1965); Davey, *J. Dep. Agric. Vict.* 21: 28 (1923); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 45, col., & fig. 114 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 126 fig. 3, col. (1913), as *Lepidium Draba*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 178 (1970).

*Vern.*: Hoary Cress. *Distr.*: ACDGHJKMNPR—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

#### CUPHONOTUS O. E. Schulz (1933)

*C. antipodus* (F. Muell.) J. M. Black in *Trans. roy. Soc. S. Aust.* 61: 244 (1937).

*Capsella antipoda* F. Muell. in *Trans. phil. Soc. Vict.* 1: 34 (1855).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 4, col. (1855), as *Hutchinsia australis*.

*Vern.*: Cuphonotus. *Distr.*: JN—also Tas.

#### \*THLASPI L. (1753)

\**T. arvense* L. *Spec. Plant.* 2: 646 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 66 (1949); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 46, col. (1958); King in Carn, *Control of Weeds* (N.S.W. Dep. Agric.) t. opp. 36, col. (1939); Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: fig. 16 (1940); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 128 fig. 1, col. (1913).

*Vern.*: Penny-cress. *Distr.*: ST—also N.S.W., N.Z.

#### CAPSELLA Med. (1792)

Leaves oblong to lanceolate, mostly *pinnatisect*; fruiting pedicel 8-10 mm. long, *longer than* pod; siliqua *triangular*, 5-8 mm. wide, with broad *shallow* notch; seeds orange, 10-15 per loculus (frequent weed):

\**C. bursa-pastoris* (L.) Moench *Meth. Plant.* 271 (1794).

*Thlaspi bursa-pastoris* L. *Spec. Plant.* 2: 647 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 541 (1948); Ewart, *Flor. Vict.* fig. 225 (1931); Ross-Craig, *Drawings Brit. Plants* 3: t. 58 (1949); Koppel, *Flor. Israel* t. [59] (1952); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 11 A (1940); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 135 fig. 1 (1913); Leigh & Mulham, *Pastoral Plants Riverine Plain* 82, col. (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 180 (1970).

*Vern.*: Shepherd's Purse. *Distr.*: ACHJKMNPRTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

Leaves oblanceolate, *entire or with few blunt teeth*; fruiting pedicel 1-2 mm. long, *much shorter than* pod; siliqua *narrowly cuneate*,  $\pm$  2 mm. wide, with broad *deep* notch; seeds pale yellow, 4-6 per loculus (rare plant of S.W. and far W. regions):

*C. pilosula* (F. Muell.) F. Muell. *Plants indig. Colon. Vict.* 1: 44 (1862).

*Microlepidium pilosulum* F. Muell. in *Linnæa* 25: 371 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 542 D (1948)—fr.

*Vern.*: Hairy Shepherd's Purse. *Distr.*: CE—also W.A., S.A., N.S.W.

#### HYMENOLOBUS Nutt. (1838)

*H. procumbens* (L.) Nutt. ex J. M. Black in *Trans. roy. Soc. S. Aust.* 61: 244 (1937).

*Lepidium procumbens* L. *Spec. Plant.* 2: 643 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 542 H (1948); Abrams, *Ill. Flor. Pacific States* 2: fig. 2060 (1944); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 272 b, col. (1912); Coste, *Flor. Franc.* 1: fig. 333 (1901).

*Vern.*: Oval Purse. *Distr.*: ABCEJNP—also W.A., S.A., Tas., N.Z.

#### PHLEGMATOSPERMUM O. E. Schulz (1933)

*P. cochlearinum* (F. Muell.) O. E. Schulz in *Bot. Jb.* 66: 93 (1933).

*Eunomia cochlearina* F. Muell. in *Linnæa* 25: 369 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 529 H-J (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 5 (1891), as *Thlaspi cochlearinum*.

*Vern.*: Nil. *Distr.*: A—also S.A., Cent. Aust.

[Victorian and Murray Mallee populations of South Australia are referable to the var. *eremæum* (J. M. Black, ut *Hutchinsia* sp.) J. M. Black in *Trans. roy. Soc. S. Aust.* 61: 244 (1937), distinguishable by its pods which are only *very slightly* winged and notched at the summit.]

#### Tribe EUCLIDIEÆ

##### \*MYAGRUM L. (1753)

\**M. perfoliatum* L. *Spec. Plant.* 2: 640 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 542 B (1948); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1060 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 4: t. 129 fig. 4 (1913); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 242, col. (1912); Coste, *Flor. Franc.* 1: fig. 290 (1901).

*Vern.*: Musk Weed. *Distr.*: C—also S.A.

\**NESLIA* Desv. (1814)

\**N. paniculata* (L.) Desv. in *J. Bot., Paris* 3: 162 (1814).

*Myagrum paniculatum* L. *Spec. Plant.* 2: 641 (1953).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 2: fig. 2064 (1944); Muenscher, *Weeds* fig. 51 (1947); Reichenbach, *Icon. Flor. germ.* 2: t. 24 fig. 4291, col. (1837-38); Coste, *Flor. Franc.* 1: fig. 294 (1901).

*Vern.*: Ball Mustard. *Distr.*: H (St. Arnaud)—also S.A.

Tribe STENOPETALEÆ

STENOPETALUM R. Br. ex DC. (1821)

Pods *cylindric-ovoid*, 4-6 mm. long, on *erect* pedicels *shorter than pod*; seeds 8-12 per loculus,  $\pm$  1 mm. long (*glabrous* annual):

*S. lineare* R. Br. ex DC. *Regn. Veg. Syst. nat.* 2: 513 (1821).

*Illust.*: Curtis, *Student's Flor. Tasm.* 1: fig. 11 (1956); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 5 n.169 (1965).

*Vern.*: Narrow Thread-petal (Wooreko of Darling R. aborigines). *Distr.*: ABCE FMNPTV—also W.A., S.A., Tas., N.S.W., Qd, Cent. Aust.

—As for the last, but fruiting pedicels at least *as long as pod*, seeds 5-7 per loculus and 2 mm. long, and whole plant covered with a hoary *stellate indumentum*:

*S. velutinum* F. Muell. *Plants. indig. Colon. Vict.* 1: 49 (1862).

*Vern.*: Velvet Thread-petal. *Distr.*: CH (Wimmera)—also W.A., S.A., N.S.W., Qd.

—Pods  $\pm$  *globular*, 3-4 mm. long, on *recurved* pedicels *as long as pod*; seeds 5-6 per loculus, 1.5 mm. long (*glabrous* Mallee annual):

*S. sphærocarpum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 35 (1855).

*Vern.*: Pea Thread-petal. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

Tribe ALYSSEÆ

ALYSSUM L. (1753)

*A. linifolium* Steph. ex Willd. *Spec. Plant.* 3: 467 (1800).

*Illust.*: Javorka & Csapody, *Iconogr. Flor. Hungar.* 211 (1930).

*Vern.*: Flax-leaf Alyssum. *Distr.*: ABCG—also W.A., S.A., N.S.W., Qd, N. Terr.



## \*LOBULARIA Desv. (1814)

\**L. maritima* (L.) Desv. in *J. Bot., Paris* 3: 162 (1814).

*Clypeola maritima* L. *Spec. Plant.* 2: 652 (1753);

*Alyssum maritimum* (L.) Lam. *Encycl. méth. Bot.* 1: 98 (1783).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 26 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 447 fig. 871 f-l (1913); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 221, col. (1912), as *Alyssum maritimum*; Coste, *Flor. Franc.* 1: fig. 266 (1901), as *A. maritimum*.

*Vern.*: Sweet Alyssum (Sweet Alice). *Distr.*: EP—also W.A., S.A., Tas., N.S.W., N.Z.

## Tribe DRABÆÆ

## \*EROPHILA DC. (1821)

\**E. verna* (L.) Chevall. *Flor. gén. Envir. Paris* 2: 898 (1827).

*Draba verna* L. *Spec. Plant.* 2: 642 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 31 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 135 fig. 8 (1913), as *Draba verna*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 176 (1970).

*Vern.*: Whitlow Grass. *Distr.*: DEHJMNVPWZ—also S.A., Tas., A.C.T., N.Z.

## Tribe ARABIDÆÆ

## CARDAMINE L. (1753).

1. Small annual herb with rosulate foliage; leaves (and sometimes stems and fruits) *sparsely hairy*, pinnate with 3-7 pairs of rotund to broadly oblanceolate leaflets; petals to 5 mm. long,  $\pm$  twice the length of sepals; stamens 4; stigma sessile; valves of fruit coiling outwards from base at dehiscence:

\**C. hirsuta* L. *Spec. Plant.* 2: 655 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 231 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 21 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 133 fig. 4, col. (1913).

*Vern.*: Common Bitter-cress. *Distr.*: JMNP—also S.A., Tas., N.S.W., N.Z.

—*Perennials* (sometimes very small); leaves *glabrous* and either entire, toothed or pinnate. 2

2. Seeds smooth; plant seldom much more than 1 ft. high 4  
Seeds reticulate and pitted; plant usually 1-3 ft. high, with broad leaves or segments; style slender 3

3. Leaves entire or sinuate-toothed, the upper ones *sessile*; flowers *small* (petals <5 mm. long); seeds *finely reticulate*; style elongated:

*C. stylosa* DC. *Regn. Veg. Syst. nat.* 2: 248 (1821).

*Illust.*: Hooker, *Icon. Plant.* 3: t. 259 (1840), as *Arabis gigantea*.

*Vern.*: Long-style Bitter-cress. *Distr.*: STZ—also Tas., N.S.W., Qd, N.Z.

—Leaves *all petiolate*, at least the lower ones pinnately divided; flowers *large* (petals 5-10 mm. long); seeds with *large coarse reticulations*:

**C. dictyosperma** Hook. *J. Bot. Lond.* 1: 246 (1834).

*Vern.*: Forest Bitter-cress. *Distr.*: DEJKNRSTVZ—also W.A., Tas., N.S.W.

4. Petals narrow, 5 mm. long or less, only *slightly exceeding sepals*; stamens 4 (rarely 5); leaves pinnatifid, with *linear acutish lobes* or teeth and a broad rhachis:

**C. laciniata** F. Muell. in *Trans. phil. Soc. Vict.* 1: 34 (1855).

*Vern.*: Jagged Bitter-cress. *Distr.*: AEJMNSV—also S.A., N.S.W.

—Petals at least *twice as long as sepals*; stamens 6; pinnæ of leaves either subrotund or very narrow-linear 5

5. Leaves mostly basal, with 1-2 (rarely 3-4) pairs of *subrotund* leaflets and a larger, terminal, often cordate leaflet (sometimes only the terminal one developed); petals to 5 mm. long, seldom longer; stigma  $\pm$  *sessile*:

? **C. debilis** Banks ex DC. *Regn. Veg. Syst. nat.* 2: 265 (1821).

*C. hirsuta* sens. Ewart *Flor. Vict.* 534 (1931), *non* L. (1753);

*C. heterophylla* (Forst. f., ut *Sisymbrium* sp.) O. E. Schulz in *Bot. Jb.* 32: 487 (1903), atque *C. heterophylla* Hook. *Compan. Bot. Mag.* 1: 273 (1835), *non* Host (1797), *nec* Lapeyr. (1813), *nec* Bory (1820).

*Illust.*: Hooker (*l.c.*), as *C. heterophylla*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 174 (1970), as *C. sp.*

*Vern.*: Common Bitter-cress. *Distr.*: CDEHJMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

[The more robust, large-flowered and large-fruited population in the Australian alps, although at present referred to *C. debilis*, may prove to be a distinct species.]

—Leaves dispersed along weak stems, the segments *narrow-linear* to filiform; petals 5-10 mm. long, broadly obovate; stigma on a *slender style* (persistent in fruit)—swamp plant:

**C. tenuifolia** Hook. *J. Bot. Lond.* 1: 247 (1834).

*Vern.*: Slender Bitter-cress. *Distr.*: CDENZ—also S.A., Tas., N.S.W.

[*C. eustylis* F. Muell. (Dwarf Bitter-cress) is a small glabrous annual, with irregularly toothed leaf-segments and white petals *much shorter* than the sepals. It is typically tropical, but colonizes clay-flats and swamps along inland water-courses of all the mainland States except Victoria. Ewart's record in *Flor. Vict.* 533 (1931) cannot be substantiated by any known collection and, although *C. eustylis* occurs in the Wentworth district (N.S.W.), evidence that it crosses the Murray is lacking.

The circumscription of *Cardamine*, adopted above, follows other recent authors of Australian State floras, viz. Ewart (1931), Black (1948) and Curtis (1956); but it is realized that the criteria at present purporting to distinguish the genera

*Cardamine*, *Nasturtium* and *Rorippa* need re-assessment, with the possibility of some radical changes in existing nomenclature.]

### BARBAREA R. Br. (1812)

**B. australis** Hook. f. *Flor. N.-Z.* 1: 14 (1852).

*B. vulgaris* sens. Ewart *Flor. Vict.* 530 (1931), *non certe* R. Br. (1812).

*Vern.*: Austral Winter-cress. *Distr.*: SV—also Tas., N.S.W., ? N.Z.

[The two Mediterranean species *B. verna* (Mill.) Aschers. and *B. intermedia* Bor. have been recorded as naturalized in Tasmania, the former being "locally abundant" (*teste* Curtis, 1956); but they have not yet been noted anywhere in Victoria. Both differ from *B. australis* in having the upper stem-leaves pinnately and deeply lobed.]

### TURRITIS L. (1753)

**T. glabra** L. *Spec. Plant.* 2: 666 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 18 (1949); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: t. 177, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 136 fig. 1 (1913).

*Vern.*: Tower Mustard (Smooth Rock-cress). *Distr.*: W—also N.S.W.

### RORIPPA Scop. (1760)

**R. islandica** (Oeder) Borbás *Balaton. Flor.* 2: 392 (1900).

*Sisymbrium islandicum* Oeder *Icon. Plant.* 3: t. 409 (1770);

*Nasturtium palustre* (L., ut *Sisymbrium amphibium* var.) DC. *Regn. veg. Syst. nat.* 2: 191 (1821).

*Illust.*: Oeder (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 306, col. (1968); Ross-Craig, *Drawings Brit. Plants* 3: t. 6 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 132 fig. 5, col. (1913), as *R. silvestris*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 175 (1970).

*Vern.*: Marsh Yellow-cress (Yellow Marsh-cress). *Distr.*: ADELNPSWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

### \*NASTURTIIUM R. Br. in Ait. f. (1812)

\***N. officinale** R. Br. in Ait. f. *Hort. kew.* ed. 2, 4, 110 (1812).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 532 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 3 (1949); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 246 (1957), as *Rorippa nasturtium-aquaticum*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 132 fig. 4, col. (1913).

*Vern.*: Water-cress. *Distr.*: EJNPRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 155 (1965), records for the Mt. Lofty Range the closely related *N. microphyllum* (Boenningh.) Reichenb. which is differentiated by its slightly longer pods (16-22 mm.), seeds virtually in a

single row and with more finely sculptured testa ( $\pm 100$  reticulations on each face). Definite occurrences of this species have been noted recently in far S.W. Victoria (at Darlot's Ck & Gorae West), while it is also recorded for the A.C.T., Sydney & New England districts in N.S.W.]]

### Tribe MATTHIOLEÆ

\*MATTHIOLA R. Br. in Ait. f. (1812)

\**M. longipetala* (Vent.) DC. *Regn. veg. Syst. nat.* 2: 174 (1821).

*Cheiranthus longipetalus* Vent. *Descr. Plant. nouv. Jard. Cels.* t. 93 (1802).

*Vern.*: Two-horned Stock. *Distr.*: C (Dimboola)—also S.A.

[Victorian and South Australian occurrences of this garden escape are referable to subsp. *bicornis* (Sibth. & Sm., ut *Cheiranthus* sp.) P. W. Ball in *Repert. Spec. nov. Regn. veg.* 68: 194 (1963), distinguishable by its wider (3-7 mm.) pink or purple petal-limb and the *up-curved* horns on the siliqua. The common garden Stock, *M. incana* (L.) R. Br., differs in its shorter pods (4-12 cm.) with much shorter (to 3 mm.), *not* horn-like stigma lobes; it is noteworthy for its large white, red or purple, spicy-scented flowers, and may occasionally escape from cultivation.]

### Tribe HESPERIDEÆ

\*ERYSIMUM L. (1753)

\**E. repandum* L. *Demonstr. Plant.* 17 (1753).

*Illust.*: Wauer in Ewart, *Weeds* . . . *Vict.* t. opp. 16, col. (1909); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 429 fig. 860 a (1913).

*Vern.*: Treacle Mustard. *Distr.*: BCDHN.

### Tribe SISYMBRIÆ

\*SISYMBRIUM L. (1753)

1. Siliqua *closely appressed* to the stem, conico-cylindrical, <2 cm. long, usually downy; seeds  $\pm 6$  per loculus; petals  $\pm 1\frac{1}{2}$  times the length of sepals; style 0.5-1 mm. long:

\**S. officinale* (L.) Scop. *Flor. carniol.* ed. 2, 2: 26 (1772).

*Erysimum officinale* L. *Spec. Plant.* 2: 660 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 534 (1948); Ross-Craig, *Drawings Brit. Plants* 3: t. 38 (1949); *Tasm. J. Agric.* 26: 166 (1955); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1053 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: t. 129 fig. 1 (1913).

*Vern.*: Hedge Mustard. *Distr.*: DJKMNPRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Siliqua *not* appressed to stem, very slender, >2.5 cm. long; seeds 30-60 per loculus

2. Plant *grey-pubescent* (stems with downwardly directed hairs); siliques widely spaced, 4-10 cm. long, on thick stalks 3-5 mm. long, at first downy, thick-walled; petals *twice as long as sepals*; style 1-3 mm. long:

\**S. orientale* L. *Cent. 2 Plant.*: 24 (1756).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 535 (1948); Ewart, *Flor. Vict.* fig. 224 (1931); Ross-Craig, *Drawings Brit. Plants* 3: t. 40 (1949); Orchard, *J. Dep. Agric.; S. Aust.* 50: 177 (1946); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1055 a (1962); Leigh & Mulham, *Pastoral Plants Riverine Plain* 84, col. (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 173 (1970).

*Vern.*: Indian Hedge Mustard. *Distr.*: ABCGHJMNPRTW—also W.A., S.A., Tas., N.S.W., A.C.T., Cent. Aust., N.Z.

—Plant *glabrous* or almost so; siliques *ascending*, rather crowded, 2.5-6 cm. long, on *slender* stalks 6-10 mm. long, *glabrous, thin-walled* and rendered *nodular* by the seeds; petals *hardly longer* than sepals; style rarely >0.5 mm. long (W. and chiefly N.W. districts):

\**S. irio* L. *Spec. Plant.* 2: 659 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 3: t. 41 (1949); *Flor. Polon. Terr. adjac. Icon.* 9: t. 1054 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 166 fig. 772 f-i (1913); Leigh & Mulham, *Pastoral Plants Riverine Plain* 83, col. (1965).

*Vern.*: London Rocket. *Distr.*: ABCFNR—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—As for the last, but the almost *horizontal siliques* not manifestly nodular, pedicels very *short and thick* (2-3 mm.) and lower leaves *never* deeply lobed (abundant along Murray Valley between Swan Hill and Mildura):

\**S. erysimoides* Desf. *Flor. atlant.* 2: 84, t. 158 (1798).

*Illust.*: Desfontaines (*l.c.*); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 429 fig. 860 b-f (1913).

*Vern.*: Smooth Mustard. *Distr.*: ABFG—also S.A., N.S.W.

#### ARABIDELLA O. E. Schulz (1924)

Plant *perennial, shrubby*, with whitish stems; leaves *all cauline*, to 4 cm. long; inflorescence *open and loose*; petals *white to creamy yellow*, 3-6 mm. long, very broad, on *narrow claws*, *far exceeding* the greenish sepals; fruit 15-30 mm. long, slightly >1 mm. broad, on *erect* or slightly spreading pedicels 10-20 mm. long:

A. *trisecta* (F. Muell.) O. E. Schulz in *Pflanzenreich* IV 105 (Heft 86): 179, 178 fig. 33 (1924).

*Erysimum trisectum* F. Muell. in *Linnaea* 25: 368 (1853)—*in textu*;

*Blennodia trisecta* (F. Muell.) Benth. *Flor. aust.* 1: 74 (1863).

*Illust.*: Schulz in *Pflanzenreich* IV 105 (Heft 86): 178 fig. 33 (1924).

*Vern.*: Shrubby Cress. *Distr.*: AFG—also W.A., S.A., N.S.W., Qd.

Plant *annual, herbaceous*; leaves initially forming a *basal rosette*, to 3 cm. long;

inflorescence dense; petals bright yellow, 2-4 mm. long, broadly clawed, only slightly exceeding the yellow sepals; fruit 10-15 mm. long, 1 mm. broad or less, on pedicels (5-12 mm. long) that spread widely from stem at an angle of  $\pm 45^\circ$ :

**A. nasturtium** (F. Muell.) E. A. Shaw in *Trans. roy. Soc. S. Aust.* 89: 191 (1965).

*Erysimum nasturtium* F. Muell. in *Linnaea* 25: 368 (1853);

*Blennodia nasturtioides* (F. Muell. ut *Sisymbrium* sp.) Benth. *Flor. aust.* 1: 74 (1863).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 80, col. (1965), as *Blennodia nasturtioides*.

*Vern.*: Yellow Cress. *Distr.*: AFG—also S.A., N.S.W., Qd.

#### MENKEA Lehm.

**M. australis** Lehm. *Ind. Semin. Hort. Handb.* 8 (1843).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 5 n.166 (1965).

*Vern.*: Fairy Spectacles. *Distr.*: ABC—also W.A., S.A., N.S.W.

#### DRABASTRUM O. E. Schulz (1924)

**D. alpestre** (F. Muell.) O. E. Schulz in *Pflanzenreich* IV 105 (Heft 86): 257, 258 fig. 54 (1924).

*Blennodia alpestris* F. Muell. in *Trans. phil. Soc. Vict.* 1: 100 (1855).

*Illust.*: Schulz (*l.c.*).

*Vern.*: Mountain Cress. *Distr.*: V (near Suggan Buggan)—also N.S.W.

#### GEOCOCCUS J. Drummond ex Harvey in Hook. (1855)

**G. pusillus** J. Drummond ex Harvey in Hook. *Lond. J. Bot. Kew Gdns Misc.* 7: 52 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 536 (1948); Ewart, *Proc. roy. Soc. Vict.* new ser. 20: t. 10 a & 11 (1907).

*Vern.*: Earth Cress. *Distr.*: ACHMN—also W.A., S.A., N.S.W., Qd.

#### HARMSIODOXA O. E. Schulz (1924)

Petals 4-8 mm. long, far exceeding the sepals; pod with hairs at distal end longer than those at proximal end, its pedicel 4-12 mm. long (i.e. about equal to pod):

**H. blennodioides** (F. Muell.) O. E. Schulz in *Pflanzenreich* IV 105 (Heft 86): 261, 262 fig. 56 (1924).

*Erysimum blennodioides* F. Muell. in *Linnaea* 25: 367 (1853);

*Blennodia lasiocarpa* F. Muell. *Plants indig. Colon. Vict.* 1: 40, t. 2 (1862).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 600 (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 8 (1886), as *Erysimum lasiocarpum*; Schulz in *Pflanzenreich* IV 105 (Heft 86): 262 fig. 56 (1924); Mueller, *Plants indig. Colon. Vict.* 1: t. 2 (1862), as *Blennodia lasiocarpa*; Myers in Turner, *Forage Plants Aust.* t. opp. 4 (1891), as *B. lasiocarpa*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 80, col. (1965), as *Blennodia blennodioides*.

*Vern.*: May Smocks. *Distr.*: ABFG—also S.A., Cent. Aust., N.S.W.

Petals <4 mm. long, only slightly exceeding the sepals; pod with short hairs of  $\pm$  equal length, its pedicel 1-4 mm. long (much shorter than pod):

**H. brevipes** (F. Muell.) O. E. Schulz in *Pflanzenreich* IV 105 (Heft 86): 263, 13 fig. 7 A (1924).

*Erysimum brevipes* F. Muell. in *Linnaea* 25: 367 (1853);

*Blennodia brevipes* (F. Muell.) *Plants indig. Colon. Vict.* 1: 41 (1862).

*Illust.*: Schulz in *Pflanzenreich* IV 105 (Heft 86): 13 fig. 7 A (1924); Black, *Flor. S. Aust.* ed. 2: fig. 529 A-E (1948), as *Blennodia brevipes*.

*Vern.*: Short Cress. *Distr.*: AB—also W.A., S.A., N.S.W.

#### PACHYMITUS O. E. Schulz (1924)

**P. cardaminoides** (F. Muell.) O. E. Schulz in *Pflanzenreich* IV 105 (Heft 86): 266, 13 fig. 7 B (1924).

*Sisymbrium cardaminoides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 34 (1855);

*Blennodia cardaminoides* (F. Muell.) Benth. *Flor. aust.* 1: 75 (1863).

*Illust.*: Schulz in *Pflanzenreich* IV 105 (Heft 86): 13 fig. 7 B (1924).

*Vern.*: Sand Cress. *Distr.*: ABCDEJ—also W.A., S.A., N.S.W., Qd.

#### \*CAMELINA Crantz (1762)

\***C. sativa** (L.) Crantz *Stirp. austriac.* 1: 18 (1762).

*Myagrum sativum* L. *Spec. Plant.* 2: 641 (1753).

*Illust.*: Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 1: fig. 243, col. (1912); Hegi, *Ill. Flor. Mittel-Eur.* 4: 369 fig. a-f (1913); Coste, *Flor. Franc.* 1: fig. 292 (1901).

*Vern.*: False Flax (Gold of Pleasure). *Distr.*: CDHR—also Tas.

[The Asiatic and East European *Chorispora tenella* (Pall.) DC. appeared at Lake Marmal near Boort in Sept. 1941, but seems not to have been observed again in the past 30 years. This glandular-hairy annual has pinnatifid leaves and slender acuminate pods (3-4 cm. long) that break up at maturity into 10-12 two-seeded joints. Limited and non-persistent occurrences of European *Isatis tinctoria* L. (Woad) have been noted intermittently among crop plants. It is a stout biennial or perennial (to 4 ft. high), glaucous above, with sagittate stem-leaves and pendulous, oblong, samara-like pods (1-2 cm. long) with a broad wing.

Several familiar garden ornamentals in the *Cruciferae* tend to persist, and even escape, by successive crops of seed, but hardly fall into the category of naturalized herbs, e.g. magenta-flowered Honesty (*Lunaria annua* L., with rough cordate

leaves and very large, round, flat pods like silvery spectacles); Wallflower (*Cheiranthus cheiri* L., with fragrant yellow-and-brown blooms); Candytuft (*Iberis amara* L., having toothed spatulate leaves and white zygomorphic flowers in dense corymbs), and *Aubrieta deltoidea* (L.) DC. (a grey-downy mat-plant of walls and rock-gardens, having rhomboid leaves and deep mauve to violet flowers). Ewart, *Flor. Vict.* 535 (1931), records Virginian Stock, *Malcolmia maritima* (L.) R. Br., as "a common garden plant" and "an occasional temporary escape". In 40 years the writer has never seen this small, diffuse, pubescent, Mediterranean annual, either within or outside Victorian gardens, and the only specimens in Melbourne Herbarium were grown at the adjoining Royal Botanic Gardens during 1911.]

## Family \*RESEDACEÆ

## \*RESEDA L. (1753)

1. Leaves undulate, all *simple and entire*; racemes very long (to 1 ft.) and slender ( $\pm$  1 cm. wide); sepals and petals 4, yellowish-green, the uppermost petal 3- to 8-lobed; capsule 3-valved, *subglobose*, 3-5 mm. long; seeds smooth, shining:

\**R. luteola* L. *Spec. Plant.* 1: 448 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 4: t. 2 (1950); Ewart, *Flor. Vict.* fig. 231 (1931); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 56, col. (1958); Curtis, *Student's Flor. Tasm.* 1: fig. 13 (1956); King in Orchard, *J. Dep. Agric. S. Aust.* 52: 277 (1949); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 488 fig. 888 f-p (1913); Leigh & Mulham, *Pastoral Plants Riverine Plain* 85, col. (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 181 (1970).

*Vern.*: Weld. *Distr.*: ACDGJMNPRWZ—also W.A., S.A., TAS., N.S.W., A.C.T., N.Z.

—Leaves *pinnatisect*; racemes 1-2 cm. wide; sepals and petals 5-6, the upper 3-lobed; capsule *oblong-ellipsoid*, >7 mm. long 2

2. Petals *yellow*, the 2 upper 3-lobed with central lobe much *smaller and shorter* than the 2 falcate lateral lobes; stamens *falling* long before fruit matures; capsule 3-valved and 3-toothed at apex; seeds *smooth, shining*:

\**R. lutea* L. *Spec. Plant.* 1: 449 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 4: t. 1 (1950); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 324, col. (1913); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>1</sup>: 488 fig. 888 a-e (1913); Coste, *Flor. Franc.* 1: fig. 403 (1901); Everard, *Wild Flowers World* t. 11, fig. D col. (1970).

*Vern.*: Cut-leaf Mignonette. *Distr.*: NP—also S.A., Tas., N.S.W., N.Z.

—Petals *white*, all *equally 3-lobed*; staminal filaments *persisting* until fruit ripens; capsule 4-valved and 4-toothed at apex; seeds *dull, granular*:

\**R. alba* L. *Spec. Plant.* 1: 449 (1753).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 2: t. 101 fig. 4448, col. (1837-38); Coste, *Flor. Franc.* 1: fig. 399 (1901).



*Vern.*: White Mignonette. *Distr.*: P—also W.A., S.A., Tas.

[The European *R. odorata* L. (Common Mignonette) is frequently cultivated for its delicately scented flowers, seeds copiously and may continue in gardens for many years. The upper 2 of its 6 creamy petals are cut into 9-15 *spathulate* lobes, and the *nodding* subglobose capsule is 7-11 mm. wide.]

### Family DROSERACEÆ

#### DROSERA L. (1753)

1. Leaves *all in a basal rosette* 4  
Leaves distributed *along slender stems* (sometimes *also radical*) 2
2. Stems *weak*, 1-2 ft. long or more, scrambling on other plants; leaves *regular, hemispherical, peltate*, on filiform petioles; flowers *large*, the petals 1 cm. long or more; styles 3, several times *dichotomously branched* into filiform segments; calyx villous; seeds 2-3 mm. long:

*D. planchonii* Hook. f. in Planch. in *Ann. Sci. nat. (Bot.)* sér. 3, 9: 294 (1848)  
*D. menziesii* R. Br. var. *albiflora* Benth. *Flor. aust. 1*: 468 (1863).

*Illust.*: Ewart, *Flor. Vict.* fig. 227 (1931), as *D. menziesii*.

*Vern.*: Climbing Sundew. *Distr.*: BCDEHJMNPRTWZ—also W.A., S.A., Tas., N.S.W.

—Stems *self-supporting*; leaves *irregular*, with *lateral* petioles and 2 auriculate appendages on margin; petals 5-7 mm. long; seeds <2 mm. long 3

3. Sepals *glabrous*; basal leaves usually *reduced to scales*; styles 3, *fan-shaped*, with numerous crowded clavate segments; seeds *linear*,  $\pm$  1 mm. long:

*D. auriculata* Backh. ex Planch. in *Ann. Sci. nat. (Bot.)* sér. 3, 9: 295 (1848).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 367, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 49 (1967); Curtis, *Student's Flor. Tasm. 1*: fig. 46 (1956); Erickson, *Plants of Prey* 47 fig. 1-4 (1968); Black, *Flor. S. Aust.* ed. 2: fig. 548 D-F (1948).

*Vern.*: Errienellam (Tall Sundew). *Distr.*: BCDEFHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Sepals *hairy*; basal rosette usually *present*; styles 3, *dichotomously branched*; seeds *ovoid*, <0.5 mm. long:

*D. peltata* Sm. ex Willd. *Spec. Plant. 1*: 1546 (1798).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 548 G-H (1948); Vickery, *Proc. Linn. Soc. N.S.W.* 58: t. 8 (1933); Fitch in Hooker f., *Flor. Tasm. 1*: t. 6, col. (1855), as *D. foliosa*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 182 A (1970).

*Vern.*: Pale Sundew. *Distr.*: CDEHJKMNPRSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[A form from peaty ground on Tasmanian heaths, having unbranched stems, narrower sepals, smaller petals and narrower slightly winged seeds, was described

as *D. gracilis* Hook. f. in Planch. in *Ann. Sci. nat. (Bot.)* sér. 3, 9: 297 (1848). G. Bentham, *Flor. aust. 1*: 465 (1863), reduced this taxon to a variety of *D. peltata*. In W. M. Curtis's *Student's Flor. Tasm. 1*: 186 (1956), it has been restored to specific rank, and the range extended into Victoria. The writer fails to find any such correlation of characters among Victorian populations which, it is considered, should all be referred to *D. peltata*—of rather wide circumscription.]

4. Leaves 2-6" long, once or twice *bifurcating* into *narrow-linear*, tapering segments; scape to 1 ft. or more high, usually bearing several terminal white flowers each about 1" across; styles 3, intricately branched (plant blackening when dried):

*D. binata* Labill. *Nov. Holl. Plant. Specim. 1*: 78, t. 105 (1805).

*Illust.*: Labillardière (*l.c.*); Erickson, *Plants of Prey* 47 fig. 17-20 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 4, col.* (1968); Fanning in Clemesha, *Aust. Plants 4*: 3 (1968); *Curtis's bot. Mag.* 58: t. 3082, *col.* (1831); Garnet, *Wildflowers Wilson's Prom.* fig. 446 (1971).

*Vern.*: Forked Sundew. *Distr.*: DEJKNPRSTZ—also S.A., Tas., N.S.W., Qd, N.Z.

—Leaves <2" long, *entire*; flower often much <1" wide 5

5. Flowers *white*, few, each *solitary* on a pedicel arising directly from centre of rosette 7

Flowers *red or pink*, in *racemes* of 2 to many on erect scapes; styles 3 6

6. Stipules *absent*; leaf-blades *rounded*; scapes usually <2" high, bearing few, often *nodding* flowers in a very *open* raceme; sepals *golden-hairy*; petals *scarlet*; styles once or twice *forked*:

*D. glanduligera* Lehm. *Nov. Stirp. Pugill. 8*: 37 (1844).

*Illust.*: Erickson, *Plants of Prey t. 2* fig. 8, *col.* (1968).

*Vern.*: Scarlet Sundew. *Distr.*: BCDEJHNMNPRVW—also W.A., S.A., N.S.W., Tas. (Flinders Id).

—Stipules *conspicuous*, long and scarious; leaf-blades *spathulate*, obovate or oblong; scapes 3-6" long, bearing few to many *erect*, very shortly stalked flowers in a *narrow, curving, one-sided* raceme; sepals *minutely glandular*; petals pale to bright *pink*; styles *divided to base* into filiform branches:

*D. spathulata* Labill. *Nov. Holl. Plant. Specim. 1*: 79, t. 106 fig. 1 (1805).

*Illust.*: Labillardière (*l.c.*); Erickson, *Plants of Prey* 47 fig. 12-13 (1968); Scarth-Johnson, *Wildflowers Warm East Coast* 85, *col.* (1967); *Curtis's bot. Mag.* 87: t. 5240, *col.* (1861).

*Vern.*: Rosy Sundew. *Distr.*: CDJNPTWZ—also Tas., N.S.W., Qd, N.Z.

7. Leaves in a rosette <15 mm. diam., the small round blades 2 mm. long or less; basal stipules white, scarious, *conspicuous*; flowers *minute* (1.5-2.5 mm. long), glabrous, on filiform pedicels to 2 cm. long; styles 4, *undivided*:

**D. pygmæa** DC. *Prodr.* 1: 317 (1824).

*Illust.*: Erickson, *Plants of Prey* 47 fig. 8-13 (1968).

*Vern.*: Tiny Sundew. *Distr.*: CDEHJKMPTZ—also S.A., Tas., N.S.W., Qd, N.Z.

—Leaf-rosette normally >15 mm. diam.; leaf-blades >3 mm. long; stipules *absent*; flowers >5 mm. long 8

8. Leaves *spathulate* to broadly obovate, tapered to a slender petiole; pedicels usually <1" long; sepals *acute*, 7-10 mm. long; petals 12-15 mm. long; styles 3, cut into many segments (chiefly lowland plant with *bulbous* rootstock, flowering in *winter*):

**D. whittakeri** Planch. in *Ann. Sci. nat. (Bot.)* sér. 3, 9: 302 (1848).

*Illust.*: Erickson, *Plants of Prey* 47 fig. 7 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 62, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 50 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 548 A-C (1948); Ewart, *Flor. Vict.* fig. 226 (1931); Kroker, *Wild Life (Melb.)* 5: 304 (1943); *Curtis's bot. Mag.* 100: t. 6121, col. (1874); Mueller, *Key Syst. Vict. Plants* 2: fig. 11 (1886); Garnet, *Wildflowers Wilson's Prom.* t., n. 450 opp. 63 (1971).

*Vern.*: Scented Sundew. *Distr.*: BCDEHJKMNPRTW—also S.A.

—Leaves *narrow-oblong to linear*, not much wider than petiole; pedicels 1-4" long, sometimes bearing a bract; sepals *obtuse*, 5-7 mm. long; petals 6-10 mm. long; styles 3-4, short and thick, each with a *capitate* stigma (alpine plant *without* bulbous rootstock, flowering in *summer*):

**D. arcturi** Hook. *J. Bot., Lond.* 1: 247 (1834).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 509, col. (1968); Salmon, *Field Guide Alpine Plants N.Z.* t. 248, col. (1968); Erickson *Plants of Prey* 47 fig. 14-16 (1968).

*Vern.*: Alpine Sundew. *Distr.*: RSV—also Tas., N.S.W., N.Z.

### Family CRASSULACEÆ

1. Flowers *inconspicuous*, often greenish; stamens *as many as* and alternating with the free petals (leaves always *opposite* and *connate* at base) *Crassula* (p. 191)  
Flowers *conspicuous*, usually colourful; stamens *twice as many as* petals or, if sometimes equal in number, then the leaves *never* connate at base (leaves mostly alternate or whorled) 2
2. Petals *free* *Sedum* (p. 193)  
Petals *united* for greater part, far exceeding the calyx 3
3. Corolla 5-lobed, bell-like and *pendulous* (massive, round-leaved succulent) *Cotyledon* (p. 193)  
Corolla 4-lobed; flowers 4-partite (succulents, often reproducing readily from detached leaves) *Kalanchoë* (p. 193)

## CRASSULA L. (1753)

1. Flowers *never* 4-partite; seeds 1 or 2 in each carpel 6  
    Flowers *4-partite*; seeds often >2 in each carpel 2
2. Flowers mostly *clustered* in the axils or terminal 4  
    Flowers always *solitary* in the leaf-axils 3
3. Leaves 4-12 mm. long, *broadly acute*; fruiting pedicels *not* exceeding the leaves; sepals  $\pm$  2 mm. long; nectar scales *spathulate*, half as long as carpels; seeds 3-5 per carpel (swamp-loving *perennial*, with stems several inches long, *rooting* at nodes):

*C. helmsii* (Kirk) Cockayne in *Trans. N.Z. Inst.* 39: 349 (1907).

*Tillæa helmsii* Kirk *Students' Flor.* 142 (1899);

*Crassula recurva* (Hook. f., ut *Tillæa* sp.) Ostenf. in *Dansk. bot. Ark.*

2<sup>o</sup>: 40, 47 (1918), *non* N. E. Brown (1890).

*Illust.*: Laundon in *Watsonia* 5: t. 3 opp. 60 (1961); Bailey, *Compr. Cat. Qd Plants* t. 143 on 173, 177 (1913), as *Tillæa recurva*.

*Vern.*: Swamp Crassula. *Distr.*: ABCDEGHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.; introduced and naturalized in England.

—Leaves 2-3 mm. long, *acuminate*; fruiting pedicels much *longer than* leaves; sepals  $\pm$  1 mm. long; nectar scales *absent*; seeds several per carpel (*annual* with stems only 1-2" long):

*C. peduncularis* (Sm.) Meiger in *Bot. Jb.* 17: 239 (1893).

*Tillæa peduncularis* Sm. in Rees *Cyclop.* 35: sub *Tillæa* n. 4 (1817);

*T. purpurata* Hook. f. in Hook. *Lond. J. Bot.* 6: 472 (1847);

*C. bonariensis* Cambess. in St. Hil. *Flor. Brasil. merid.* 2 (xxxix *Crassulaceæ*): 194 (1829).

*Illust.*: Becker in Ewart, *Plants indig. Vict.* t. 19 opp. 8 (1910); Mueller, *Key Syst. Vict. Plants* 2: fig. 54 (1886); Mueller, *Plants indig. Colon. Vict.* t. 19 (1864/5);

Bailey, *Compr. Cat. Qd Plants* t. 142 (1913)—all as *Tillæa purpurata*.

*Vern.*: Purple Crassula. *Distr.*: ABCDEHJMNPNVZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[J. R. Laundon in *Watsonia* 5: 61 (Dec. 1961) expresses the firm conviction that *C. peduncularis* of South America and *C. purpurata* (Hook. f.) Domin in *Bibl. bot., Stuttgart* Heft 89: 150 (1925) of Australasia are conspecific.]

4. Flowers on slender pedicels (usually 5-15 mm. long), most of them in a terminal *umbel-like cyme* subtended by 4 leaves; sepals longer than petals; leaves *few*, purplish, oblong and *blunt* (small erect ephemeral, seldom >3 cm. high):

*C. pedicellosa* (F. Muell.) Ostenf. in *Dansk. bot. Ark.* 2<sup>o</sup>: 42 (1918).

*Tillæa macrantha* Hook. f. var. *pedicellosa* F. Muell. *Fragm. Phyt. Aust.* 11: 118 (1881).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 549 B-D (1948).

*Vern.*: Stalked Crassula. *Distr.*: BCDHJMNPNZ—also W.A., S.A.

—Flowers *not umbellate*; leaves *numerous*,  $\pm$  *acute* 5

5. Stems  $\pm$  *erect*; flowers  $\pm$  2 mm. wide, *subspicate* in dense axillary clusters (often elongating); sepals *twice as long as petals*; nectar scales *absent*; carpels *acuminate*, each 1- or 2-seeded:

*C. sieberana* (Schult. & Schult. f.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 618 (1917).

*Tillæa sieberiana* Schult. & Schult. f. *Syst. Veg. Mant.* 3: 345 (1827).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 551 (1948); Cheeseman, *Ill. N.Z. Flor.* t. 44 (1914), as *Tillæa sieberiana*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 183 (1970).

*Vern.*: Sieber *Crassula*. *Distr.*: ABCDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Cent. Aust., N.Z.

—Stems weak, mostly *prostrate* and reddish; flowers 4-6 mm. wide, numerous in open leafy *panicles*; sepals about *as long as petals*; nectar scales *present*, crimson, short and very broad; carpels *blunt*,  $\pm$  *truncate*, each with 6-12 seeds:

*C. macrantha* (Hook. f.) Diels & Pritzel in *Bot. Jb.* 35: 210 (1904).

*Tillæa macrantha* Hook. f. in Hook. *Icon. Plant.* 4: t. 310 (1841).

*Illust.*: Ewart, *Flor. Vict.* fig. 229 (1931); Hooker, *Icon. Plant.* 4: t. 310 (1841), as *Tillæa macrantha*.

*Vern.*: Spreading *Crassula*. *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

6. Flowers *3-partite*, *solitary* in axils; stems tufted, 2-3 cm. high; leaves  $\pm$  2 mm. long, obtuse, *perfoliate*, *triangular* and *broadest at base*; sepals longer than petals; carpels *truncate*; seeds 1, seldom 2, per carpel (rare plant of S.W. & cent. N., apparently endemic to Victoria):

*C. tripartita* N. A. Wakefield in *Vict. Nat.* 73: 186 (1957).

*Vern.*: Three-part *Crassula*. *Distr.*: EMR (Gorge W., Graytown, Rutherglen resp.).

—Flowers *5-partite*, in axillary clusters 7

7. Flowers *sessile* or almost so, in *dense clusters*; sepals *shiny*, hyaline, striated, *acuminate*; carpels *acuminate*,  $\pm$  *nodular* in lower half; nectar scales *linear*:

*C. colorata* (Nees) Ostenf. in *Dansk. bot. Ark.* 2<sup>8</sup>: 45 (1918).

*Tillæa colorata* Nees in Lehm. *Plant. Preiss.* 1: 277 (1844-45).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 549 A & 550 (1948); Leigh & Mulham, *Pastoral Plants Riverine Plain* 85, col. (1965).

*Vern.*: Dense *Crassula*. *Distr.*: ABCFHMR—Also W.A., S.A., N.S.W., A.C.T.

—Flowers  $\pm$  *pedicellate*, in *loose clusters*; sepals *dull*, acute; carpels very *truncate*, but with minute point; nectar scales *absent*:

*C. exserta* (F. M. Reader) Ostenf. in *Dansk. bot. Ark.* 2<sup>8</sup>: 45 (1918), *in obs.*

*Tillæa exserta* F. M. Reader in *Vict. Nat.* 14: 83 (1897).

*Illust.*: Ewart, White & Tovey in *J. roy. Soc. N.S.W.* 42: t. 35 (1908), as *Tillæa exserta*.

*Vern.*: Large-fruit *Crassula*. *Distr.*: CM—also Tas. (Flinders Id).

[Numerous larger-leaved and larger-flowered perennial species of *Crassula* from South Africa are popular in gardens, where some may spread to a limited extent, but none are naturalized here.]

### \*SEDUM L. (1753)

Stems *procumbent or ascending*, yellowish-green, 5-12 cm. long; petals bright yellow, 6-8 mm. long; stamens 10 (*perennial* with hot acrid taste):

\**S. acre* L. *Spec. Plant.* 1: 432 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 10: t. 30 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 140 fig. 4, col. (1922); Coste, *Flor. Franc.* 2: fig. 1379 (1903).

*Vern.*: Wall-pepper. *Distr.*: VW (Dargo High Plains)—also Tas., N.S.W., N.Z.

Stems *erect, reddish*, 2-5 cm. long; petals *white or pale pink*, 3 mm. long; stamens 4-5 (*annual* with mild taste):

\**S. caespitosum* (Cav.) DC. *Prodr.* 3: 405 (1828).

*Crassula caespitosa* Cav. *Icon. et Descr. Plant.* 1: 50, t. 69 fig. 2 (1791).

*Illust.*: Cavanilles (*l.c.*); Coste, *Flor. Franc.* 2: fig. 1361 (1903).

*Vern.*: Tiny Stonecrop. *Distr.*: J (Tourello near Clunes) N.

[Many species of *Sedum* are grown in Victorian gardens, especially on ornamental rockeries, and some trailing perennial kinds may increase by vegetative means over small areas. The South African *Cotyledon virescens* Schönl. & E. G. Baker was noted as spreading over a landward dune at the eastern head, Lakes Entrance, in August 1944, having escaped from a cottage garden. This stout perennial has large (4-8" long), obovate, very thick, bright green leaves with a red-lined distal margin; its pink-and-yellow tubular corollas, 2-3 cm. long, are borne in a corymbose panicle about 1 ft. higher than the foliage. *Kalanchoë tubiflora* (Harvey) Hamet of Madagascar—also a broader-leaved hybrid—is widely grown by succulent fanciers in Australia and sometimes escapes, e.g. above sea-cliffs near the lighthouse at Cape Perpendicular, Jervis Bay, N.S.W. Distinctive features are the ternate, greyish, subcylindrical leaves (1-4" long) with conspicuous brown spots and 2-3 pairs of small teeth near the apex; adventitious reproductive buds are developed at the teeth, and the showy yellowish-ochre to salmon-red flower bells (2-3 cm. long) are crowded in a short terminal panicle 4-6" wide.]

### Family BAUERACEÆ

BAUERA Banks ex Andr. (1801)

Leaves  $\pm$  *serrate*, smooth and often shining above; flowers on slender, *hairy pedicels* ( $\pm$  1" long); petals *white or pink*; stamens *numerous*, with small *pale* anthers  $\pm$  0.3 mm. long; ovary with several ovules per loculus (*wide-*

spread in damp southern scrublands and forests, but apparently not in E. Gippsland):

**B. rubioides** Andr. *Bot. Repos.* 3: t. 198 (1801).

*Illust.*: Andrews (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 56, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 552 (1948); Fitch in Hooker f., *Flor. Tasm.* 1: t. 31, col. (1856); Engler in Engler & Prantl, *Natürl. Pflfam.* III 2 a: 93 (1891); Galbraith, *Wildflowers Vict.* ed. 3: t. 47 (1967); Garnet, *Wildflowers Wilson's Prom.* fig. 454 (1971); Edwards in *Curtis's bot. Mag.* 19: t. 715, col. (1804).

*Vern.*: Wiry Bauera. *Distr.*: DEJKNPRST—also S.A., Tas., N.S.W., Qd.

Leaves usually *entire*, *scabrid* above; flowers *sessile* in axils, forming long leafy spikes of bloom; petals vivid *magenta*; stamens *rarely* twice the number of petals, with *blackish* anthers 0.5-1.00 mm. long; ovary semi-inferior, with 2 ovules per loculus (Grampians only, endemic to Victoria):

**B. sessiliflora** F. Muell. in *Trans. phil. Soc. Vict.* 1: 41 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 100, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 48 (1967); Spurway, *Aust. Plants 2<sup>nd</sup>*: 150 (1963); Mueller, *Key Syst. Vict. Plants 2*: fig. 53 (1886); Elliott in Harrison, *Handb. Trees & Shrubs S. Hemisphere* 46 (1959).

*Vern.*: Grampians Bauera (Showy Bauera). *Distr.*: CDJ.

[*Aphanopetalum resinosum* Endl. (Gum Vine), in the closely related family *Cunoniaceæ*, was listed as indigenous to Victoria in F. Mueller's *Ann. Rep. Govt Bot.* 1860-61: 17 (1861). Ewart, *Flor. Vict.* 566 (1931) repeated the record without checking; but there are no Victorian specimens of this plant in any herbaria. It is now apparent that Mueller's material came from around Twofold Bay, N.S.W., 22 miles from the nearest point of Victoria—see N. A. Wakefield in *Vict. Nat.* 69: 82 (1952)—and *Aphanopetalum* should be dropped from the State's flora. *A. resinosum* is a long-scrambling shrub, with scabrid branchlets and simple, opposite, ovate-elliptic, shiny, serrated leaves 1.5-4" long. The small, greenish, apetalous flowers in axillary cymes are inconspicuous, but the 4 persistent sepals enlarge to form wings (8-12 mm. long) around the nut-like 4-lobed fruits.

European *Ribes uva-crispa* L. (Gooseberry), of the family *Grossulariaceæ*, has been noted as occasionally spontaneous in cooler parts of Victoria, e.g. at the Camel's Hump (Mt. Macedon) and Bendoc district (E. Gippsland) where the single bushes have doubtless grown from bird-deposited seeds. This intricately branched spiny shrub (to 3 ft. high) has deeply palmate-lobed, deciduous leaves 1-2" wide, greenish, 5-merous, white-petalled flowers in axillary clusters and edible, pendulous, often hispid berries (green, yellow or purple) 1-2 cm. diam.

The garden *Hydrangea*, *H. macrophylla* (Thunb.) Ser. in DC., and Strawberry Saxifrage or "Aaron's Beard", *Saxifraga stolonifera* Meerb. (syn. *S. sarmentosa* L.), are both native to Japan and China. These members of the *Hydrangeaceæ* and *Saxifragaceæ*, respectively, are widely cultivated in Victoria, and they sometimes become established in cool moist situations where plants or cuttings have been discarded—e.g. parts of the Dandenong Ranges. The former is a soft-wooded deciduous shrub to 6 ft., with broad opposite serrated leaves 3-6" long and huge globular (or flattened) trusses of blue or pink flowers, mostly sterile. The latter has striped orbicular leaves about 1" diam. (reddish beneath), spreads by long filiform stolons and bears very zygomorphic white flowers in small erect panicles, the 2 large outer deflexed petals resembling the paired lateral sepals of the familiar autumn orchid, *Eriochilus cucullatus* (Parson's Bands).]

## Family TREMADRACEÆ

[The transference of this family by J. Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 219, 223 (1959), from its traditional Englerian position among the *Geraniales* to the *Pittosporales*, is here adopted.]

## TETRATHECA Sm. (1793)

1. Leaves mostly *scattered*, sometimes a few in clusters but *not* truly whorled 3  
Leaves well developed, all or most *verticillately arranged* in 3's or 4's, forming regular whorls; ovary with 2 ovules per loculus; capsule *broadly obovate* 2
2. Leaves *ovate to ± orbicular, flat*, ciliate,  $\pm 10$  mm. long; pedicels  $\pm$  *hairy, as long as* or slightly longer than leaves; sepals *widely spreading* or even reflexed (branches usually weak, procumbent and  $>1$  ft. long):

*T. ciliata* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 205 (1838).

*Illust.*: Rosser, *Wildflowers Vict.* 81, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 89 (1967); Ewart, *Flor. Vict.* fig. 284 (1931); Brooks, *Aust. native Plants* t. opp. 113 (1959); Reeves, *Wild Life (Melb.)* 14: 215 (1951); Ross-Craig in *Curtis's bot. Mag.* 166: new ser. t. 62, col. (1949); Everard, *Wild Flowers World* t. 131, col. fig. c (1970).

*Vern.*: Pink-bells. *Distr.*: CDEHJKMNPSTVZ—also S.A., Tas.

—Leaves *linear to lanceolate*, with *recurved margins*, often  $\pm$  *erect*, somewhat scabrid, 4-8 mm. long; pedicels *glabrous, much exceeding* the leaves (often 2-3 times as long) and concentrated in the *uppermost axils*; sepals  $\pm$  *appressed* (erect semi-shrub to 1 ft. high):

? *T. ericifolia* Sm. *Exot. Bot.* 1: 37, t. 20 (1804-05).

*Illust.*: Smith (*l.c.*); Sulman, *Wildflowers N.S.W.* 2: t. 11 (1914); Sulman, *Some familiar Wildflowers* t. 9 (1913); Burbidge, *Flor. Aust. Cap. Terr.* fig. 236 (1970), as "*T.sp.* (aff. *T. ericifolia*)"; Garnet, *Wildflowers Wilson's Prom.* fig. 544 (1971).

*Vern.*: Heath Pink-bells. *Distr.*: EMNRSTVWZ—also N.S.W. (far south-east), S.A. (Kangaroo Id), A.C.T.

[Most Victorian, and South Australian, representatives differ from the typical Port Jackson form in their slightly shorter, *much less revolute* leaves and particularly in their relatively broader capsules—emarginate, obcordate to broadly cuneate and *as wide as long*. They do not seem to have been described under any distinctive name or epithet. The only population approaching true *T. ericifolia* in Victoria was found near Mallacoota, in the extreme south-east. It is doubtful whether the "var. *rubicoides*" (A. Cunn.) Benth., recorded for Wilson's Promontory in Ewart's *Flor. Vict.* 713 (1931), is identical with *T. rubicoides* A. Cunn. in *Field Geogr. Mem. N.S.W.* 336 (1825) described from the Blue Mtns., N.S.W.]



3. At least the ultimate branches *leafless*, *hairless* and rush-like 5  
All branches *leafy*; petals 6-10 mm. long; ovary with 1 ovule in each  
loculus 4
4. Plant *glabrous* or with scattered simple hairs; leaves *linear*, with recurved  
margins, *broadest* at base:

*T. pilosa* Labill. *Nov. Holl. Plant. Specim. 1*: 95, t. 122 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 673 (1948); Fitch in Hooker f., *Flor. Tasm. 1*: t. 7 fig. A & B, col. (1855), as *T. procumbens* & *T. gunnii*; King & Burns, *Wildflowers Tasm. 15*, col. (1969).

*Vern.*: Hairy Pink-bells. *Distr.*: NSTWZ—also S.A., Tas., N.S.W. (var. *denticulata*).

—Plant invested with *conspicuous glandular hairs* (on branches, foliage and pedicels); leaves *elliptic to orbicular*, usually flat, much *narrowed* at base:

*T. glandulosa* Labill. *Nov. Holl. Plant. Specim. 1*: 96, t. 123 (1806).

*Illust.*: Labillardière (*l.c.*); Curtis, *Student's Flor. Tasm. 1*: fig. 17 (1956); Meredith, *Bush Friends Tasm.* last ser. t. 11, col. (1891).

*Vern.*: Glandular Pink-bells. *Distr.*: DJNRSTUVZ—also Tas., ? N.S.W.

[The great majority of Victorian occurrences is referable to var. *orbifolia* Blakely ex A. B. Court in *Vict. Nat. 73*: 175 (1957), having almost or quite *rotund* leaf-blades.]

5. Branches *all* virtually *leafless*, or with very few scattered *narrow* leaves and bracts; pedicels *glabrous*, very short; petals 4-6 mm. long; capsule *obovate*, *emarginate*, 4-5 mm. long; ovules 1 per loculus of ovary (East Gippsland):

*T. subaphylla* Benth. *Flor. aust. 1*: 132 (1863).

*T. ericifolia* Sm. var. *aphylla* F. Muell. *Plants indig. Colon. Vict. 1*: 183 (1862).

*Vern.*: Leafless Pink-bells. *Distr.*: WZ.—also ?N.S.W.

—Lower branches with remote, nearly sessile, toothed, *rhombic-orbicular* leaves 5-10 mm. long; pedicels 10 mm. long or more, both densely *glandular-bristly* and minutely pubescent; petals >10 mm. long; capsule *fusiform*, *acuminate*, 10-15 mm. long; ovules 2 per loculus (granodiorite hills between Emerald and the Baw Baws, endemic to Victoria):

*T. stenocarpa* J. H. Willis in *Vict. Nat. 73*: 197 (1957).

*Vern.*: Long Pink-bells. *Distr.*: ST.

### Family PITTOSPORACEÆ

1. Fruit a pendulous *berry* (climbing plants; leaf-blade narrowed at base)  
*Billardiera* (p. 200)  
Fruit *dehiscent*, *capsular*

2. Flowers >1" wide, *violet*; anthers *linear*, collateral, opening by *terminal pores* (small shrub to 1 ft. high in auriferous terrain of N. & Cent. districts) *Cheiranthra* (p. 200)  
Flowers <1" wide; anthers *ovate to oblong*, opening by *longitudinal slits* 3
3. Valves of fruit *thick and hard*, >5 mm. wide, the numerous seeds in *sticky masses* (trees and tall shrubs) *Pittosporum* (p. 197)  
Valves of fruit *thin or parchment-like*, <5 mm. wide 4
4. Flowers *privet-like*, white, in *terminal panicles*; capsules *very flattened*, with 1 or 2 seeds per loculus (prickly shrub or tree) *Bursaria* (p. 198)  
Flowers never *privet-like*, 1-3 in the *leaf-axils*; capsules *inflated or slightly flattened*, with 3 to several seeds per loculus (low semi-shrubs or climbers) *Marianthus* (p. 199)

## PITTOSPORUM Banks ex J. Gærtn. (1788)

1. Leaves *narrow-lanceolate to linear*, <2 cm. wide, the margins *flat*; flowers mostly *axillary*, solitary or few together 3  
Leaves *broad-lanceolate to oblong-elliptic*, >2 cm. wide, often *undulate* on margins; flowers *terminal*, in clusters or short cymes 2
2. Leaves and pedicels *glabrous*; flowers almost *white*, intensely fragrant; fruit <1 cm. diam.,  $\pm$  *smooth*; seeds reddish-brown (small, much planted tree, indigenous to Gippsland):

*P. undulatum* Vent. *Descr. Plant. nouv. Jard. Cels.* 76, t. 76 (1802).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 567 & 568, col. (1968); *Honey Flora Vict.* (Dep. Agric.) ed. 5: 115 (1949); Adam in Ewart, *Handb. For. Trees* t. 56 (1925); Brooks, *Aust. native Plants* t. inter 112 & 113 (1959); Maiden, *For. Flor. N.S.W.* 7: t. 240 (1922); Everard, *Wild Flowers World* t. 131, col. fig. G (1970).

*Vern.*: Sweet Pittosporum. *Distr.*: NPTWZ—also S.A. (Mt. Lofty Range), Tas. (rare, in west), N.S.W., Qd.

—Undersides of at least the younger leaves, also pedicels, *rusty-pubescent*; flowers *yellow*; fruit usually >1 cm. diam., rough and manifestly *wrinkled*; seeds bright red (large uncommon shrub of far E. Gippsland):

*P. revolutum* Dryand. in Ait. f. *Hort. kew.* ed. 2, 2: 27 (1811).

*Illust.*: Adam in Ewart, *Handb. For. Trees* t. 57 (1925); Hurley in *Aust. Plants* 3<sup>rd</sup>: 33, col. (1965); *Edwards's Bot. Reg.* 3: t. 186 (1817); Scarth-Johnson, *Wild-flowers Warm East Coast* 101, col. (1967).

*Vern.*: Rough-fruit Pittosporum. *Distr.*: Z—also N.S.W., Qd.

3. Leaves *lanceolate to narrowly oblong*, usually >5 mm. wide, the margins often recurved, *pubescent* on underside; flowers *yellow-and-purplish*; sepals *spreading*, 3-6 mm. long; ovary and capsule *pubescent*; fruit-valves *dark and wrinkled* on inner face (small gully tree):

**P. bicolor** Hook. *J. Bot., Lond.* 1: 249 (1834).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 445, col. (1968); Ewart, *Flor. Vict.* fig. 233 (1931); Adam in Ewart, *Handb. For. Trees* t. 58 (1925); Galbraith, *Wildflowers Vict.* ed. 3: t. 52 (1967); Maiden, *For. Flor. N.S.W.* 8: t. 279 (1923); Garnet, *Wildflowers Wilson's Prom.* fig. 459 (1971).

*Vern.*: Banyalla. *Distr.*: KNSTVWZ—also Tas., N.S.W.

—Leaves *narrow-linear*, <5 mm. wide, flat, entirely *glabrous*; flowers pale yellow; sepals *appressed*, <3 mm. long; ovary and capsule *glabrous*; fruit valves orange-yellow, *pale and smooth* on inner face (shrub or tree of Mallee, the branches usually *pendulous* and bark often whitish):

**P. phyllireoides** DC. *Prodr.* 1: 347 (1824)—ut "*P. phylliræoides*".

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 130 & 131, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 553 A-D & 554 (1948); Rossiter in Ewart, *Handb. For. Trees* t. 59 (1925); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 8 n. 178 (1965).

*Vern.*: Weeping Pittosporum. *Distr.*: ABCGHM—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[Two New Zealand species with dark red or blackish flowers, *P. crassifolium* Banks & Soland. ex A. Cunn. ("Karo") and *P. tenuifolium* Soland. ex Gærtn. ("Kohuhu"), are widely planted in Victoria for hedges, the former in exposed coastal sites and latter in more sheltered moister localities. Seedlings of both are occasionally found near the parent trees. Branchlets, petioles and lower surfaces of the leathery leaves in *P. crassifolium* are covered by a buff or greyish-white tomentum, while the leaves in *P. tenuifolium* are glabrous, shining, more thinly textured and conspicuously undulate on their margins.]

### BURSARIA Cav. (1794)

**B. spinosa** Cav. *Icon. & Descr. Plant.* 4: 30, t. 350 (1794).

*Illust.*: *Curtis's bot. Mag.* 42: t. 1767, col. (1815); Galbraith, *Wildflowers Vict.* ed. 3: t. 53 (1967); Bishop, *Wild Life* 3: 115 (1941) & 8: 45 (1946); Black, *Flor. S. Aust.* ed. 2: 394, 393 fig. 553 H (1948); Adam in Ewart, *Handb. For. Trees* 127 (1925); Burbridge, *Flor. Aust. Cap. Terr.* fig. 184 (1970).

*Vern.*: Sweet Bursaria (Prickly Box and Blackthorn in Tas.; Native Box in S. Aust. etc.; "Kurwan" of Yarra aborigines, Vict.). *Distr.*: Throughout Victoria, except in the highlands above 3000 ft. and on grass or saltbush plains; all States & A.C.T., but apparently nowhere beyond Australia.

*Diagn.*: Shrub or small tree to 30 ft., the glabrous branches frequently spiny; leaves oblanceolate to obovate, entire or very rarely dentate; inflorescence a pyramidal panicle to 4" long; flowers opening chiefly in summer, cream or white, <1 cm. wide; sepals 1-2 mm. long, deciduous early; fruit a flat, 2-locular, notched, truncate or ± obcordate and bursiculate capsule, 5-10 mm. long; seeds flat, reniform, 1-3 per loculus.

A polymorphic species of which several varieties (variously linked by intermediate states) may be distinguished in Victoria, as follows:—

Leaves >10 mm. long and >2 mm. wide (tall shrubs to trees, unarmed or moderately spiny along branches)

Leaves glabrous beneath

Leaves 1-2.5 cm. long; branches spiny:

var. *spinosa*

—widely distributed in State.

Leaves >2.5 cm. long and usually 1-2 cm. broad; branches unarmed:

var. *macrophylla* Hook. *J. Bot., Lond.* 1: 249 (1834).

var. *luxurians* ["*luzurians*" in err.] Ewart, Rees & Wood in *Proc. roy. Soc. Vict.* new ser. 23: 55 (1910);

var. *pantonii* (Guilfoyle) Ewart *Flor. Vict.* 564 (1931);

*B. pantonii* Guilfoyle in *Vict. Nat.* 17: 42-43 (1900).

—chiefly coastal (Cape Schanck, Wilson Prom. etc.).

Leaves finely tomentose beneath,  $\pm$  2 cm. long or more, oblanceolate to linear; branches unarmed or with a few short spines:

var. ? [This variant was labelled "*var. hypoleuca*" in Mueller's herbarium, but is not identical with the Queensland entity.]

*B. incana* Lindl. in Mitch. *J. Exped. trop. Aust.* 224 (1848).

—far north-eastern and eastern districts.

Leaves <10 mm. long and usually <2 mm. wide, oblanceolate to almost orbicular (divaricate and often low shrub with extremely spiny branches):

var. *microphylla* Ewart, Rees & Wood in *Proc. roy. Soc. Vict.* new ser. 23: 56 (1910).

—western districts from the Grampians to the far N.W. Mallee, on the central-western goldfields and in dryish box-forests of the upper Snowy River Valley (in box and auriferous country, the leaves are often extremely small and frequently tomentose beneath, thus approaching var. *incana*).

[In *Bibl. bot., Stuttgart* 22 (Heft 89): 714 (1925) Domin established *B. longisepala*, also distinguished by its small leaves, very spiny branches and elongated sepals—type from the Blue Mtns., N.S.W. This taxon does not seem to be identical with *B. spinosa* var. *microphylla*.]

#### MARIANTHUS Hueg. ex Endl. (1837)

Leaves crowded, entire or tridentate at apex, mostly <1 cm. long; petals white, 4-7 mm. long, only slightly exceeding sepals; capsule glabrous, broadly obovate,  $\pm$  5 mm. long (low, often prostrate undershrub):

*M. procumbens* (Hook.) Benth. *Flor. aust.* 1: 117 (1863).

*Pittosporum procumbens* Hook. *Compan. Bot. Mag.* 1: 275 (1836).

*Vern.*: White Marianth. *Distr.*: DHJMNPRSTVWXZ—also (?)W.A., Tas., N.S.W., A.C.T., Qd.

Leaves *remote*, ovate, often cordate, >1 cm. long; corolla *pendulous*, bell-like with cohering petals, *greenish at base and orange above*, 18-25 mm. long, *far exceeding* sepals; capsule *pubescent*, narrow-oblong, to 20 mm. long (twining creeper of Grampians):

*M. bignoniaceus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 6 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 107, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 553 F-G (1948); Becker in Ewart, *Plants indig. Vict.* t. 10 opp. 6 (1910); Mueller, *Key Syst. Vict. Plants* 2: fig. 10 (1886); Mueller, *Plants indig. Colon. Vict.* t. 10 (1862).

*Vern.*: Orange Bell-climber. *Distr.*: CDJ—also S.A.

### CHEIRANTHERA Brongn. (? 1829)

*C. linearis* A. Cunn. ex Lindl. in *Edwards's bot. Reg.* 20: sub t. 1719 (1834).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 318, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 54 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 553 E (1948); Reeves, *Wild Life* 12: 456 (1950); Everard, *Wild Flowers World* t. 131, col. fig. B (1970), as *C. cyanea*.

*Vern.*: Finger-flower. *Distr.*: JKMNR—also S.A., N.S.W., Qd.

[In his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 165 (1965), HJ. Eichler has taken up the name *C. cyanea* Brongn., believing this to have priority of publication. However, detailed inquiries at Utrecht have elicited the fact that the *Cheiranthra* plate (n. 77) by Brongniart in *Bot. (Phan.) Voy. La Coquille* did not appear in 1829, but not until 1834 or later.]

### BILLARDIERA Sm. (1793)

1. Leaves quite *glabrous*; corolla *tubular*, greenish-yellow, >1" long, the petals *adhering almost to apex*; style long; berry *glabrous*, usually *purple*; seeds not invested in pulp (tall gully climber):

*B. longiflora* Labill. *Nov. Holl. Plant. Specim.* 1: 64, t. 89 (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 428, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 51 (1967); Curtis, *Student's Flor. Tasm.* 1: fig. 16 (1956); Ashby, *Aust. Plants* 4<sup>th</sup>: 228, col. (1967); King & Burns, *Wildflowers Tasm.* 13, col. (1969); Curtis's *bot. Mag.* 37: t. 1507, col. (1812); Pax in Engler, *Natürl. Pflfam.* III 2a: fig. 63 F-K (1891).

*Vern.*: Purple Apple-berry. *Distr.*: DJKNRSTVZ—also Tas., N.S.W., A.C.T.

—Leaves usually  $\pm$  *hairy* (at least on underside); corolla *campanulate*, <1" long, the petals *spreading from the middle*; style short (<4 mm. long); berry often *pubescent*, green, yellow-brown or reddish (*never purple*); seeds embedded in pulp 2

2. Flowers pale yellow, *solitary* in axils, 15-25 mm. long; sepals 6-9 mm. long; leaves often undulate on margins (widespread creeper):

**B. scandens** Sm. *Specim. Bot. New Holl.* 1: 1, t. 1 (1793).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 368, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 553 1 (1948)—fr.; Ewart, *Flor. Vict.* fig. 232 (1931); Edwards in *Curtis's bot. Mag.* 21: t. 801, col. (1800), also 32: t. 1313, col. (1810), the latter as *B. mutabilis*; Brooks, *Aust. native Plants* t. opp. 33 (1959); Burbidge, *Flor. Aust. Cap. Terr.* fig. 186 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 456 (1971).

*Vern.*: Common Apple-berry. *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[The variety *brachyantha* (F. Muell. ex Klatt, *ut sp.*) Benth. *Flor. aust.* 1: 124 (1863) differs in having flowers 2-3 together, with relatively shorter pedicels and petals. It is softly hairy, often more shrubby in habit, and seems to form a connecting link with the following species, *B. cymosa*. This variant has been found in such disjunct parts of the State as Mt. Macedon, Eltham, Buffalo ranges and Bright.]

—Flowers often bluish or mauve, 12-18 mm. long, several together in *corymb-like clusters*; sepals 3-5 mm. long (shrubby twiner of more arid west and north-west):

**B. cymosa** F. Muell. in *Trans. Vict. Inst.* 29 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 156, col. (1968).

*Vern.*: Sweet Apple-berry. *Distr.*: ABCDEFJHNMNPS—also S.A., N.S.W.

### Family ROSACEÆ

1. *Herbs* with soft, unarmed leaves ..... 6  
*Shrubs or trees*; leaves sometimes spiny and branches sometimes thorny;  
petals conspicuous ..... 2
2. Receptacle of flower strongly *convex*, the numerous exposed carpels  
becoming fleshy *coloured drupelets*; leaves usually compound (trailing  
prickly shrubs) ..... *Rubus* (p. 202)
3. Receptacle *concave*, the fruit *not* an aggregate of drupelets ..... 3
3. Leaves *pinnate*; styles and carpels *numerous*, the latter becoming *achenes*  
enclosed in a *hollow, inferior, coloured fleshy torus* or "hip" (prickly  
shrubs with showy flowers) ..... *\*Rosa* (p. 206)
- Leaves *lobed or serrate*, styles and carpels 1-5; fruit fleshy ..... 4
4. Leaf deeply *lobed*,  $\pm$  wedge-shaped at base; styles 1-2; fruit *inferior*,  
crowned by withered calyx and enclosing 1 or 2 *small curved stones*  
(small thorny tree, scattered as an escape from Wedderburn to  
Dandenong Ranges, Beechworth and E. Gippsland) ..... *\*Cratægus* (p. 207)
- Leaf *crenate-serrate*; branches *not* or rarely thorny (small trees of  
sporadic appearance in cooler districts) ..... 5
5. Carpel 1: fruit *superior*, a drupe with 1 stone; calyx *caducous*  
..... *\*Prunus* (p. 207)

- Carpels 3-5, cartilaginous in fruit and *fused* with the fleshy, much swollen receptacle; fruit (pome) *inferior*, crowned by *persistent* calyx, several-seeded, without grit-cells \**Malus* (p. 207)
6. Petals *absent*; flowers small, *numerous*, *green*, in heads, spikes or cymes; carpels 1-3 9  
 Petals *present*, *yellow*, *conspicuous*; flowers *few*, long-stalked, *solitary* or in *very open* cymes, with an epicalyx; carpels (and stamens) numerous 7
7. Carpels in a dense *hairy cluster*, their long *hooked styles* *persistent* in fruit; leaves pinnate, with large lobed terminal segment 1.5-2.5" long (perennial herb to 2 ft., chiefly in alps & subalps) *Geum* (p. 207)  
 Carpels *not* forming a hairy head, the styles *short* and *non-persistent* 8
8. Leaves *palmate* or *pinnate*; receptacle *hairy*, *dry* in fruit \**Potentilla* (p. 208)  
 Leaves *ternate*; receptacle *glabrous*, much swollen, *red* and  $\pm$  *fleshy* in fruit (long-stoloniferous trailer with leaf-like epicalyx, escaping occasionally in cool S. districts) \**Duchesnia* (p. 208)
9. Flowers sessile, in *long-pedunculate heads* or *leafless spikes* (several inches long); epicalyx *absent*; leaves *pinnate* (herbaceous perennials) 11  
 Flowers in *leafy cymes*; epicalyx *present* (but often minute); leaves *not* pinnate 10
10. *Annual* with very small flowers in dense *sessile axillary clusters*; leaves *fan-shaped*, deeply cut, <1 cm. long; stamens 1-2  
*Aphanes* (p. 209)  
*Perennial* with flowers in a *loose cymose panicle*; leaves  $\pm$  *reniform*, shallowly 9-lobed, >2 cm. long; stamens 4-5 (alpine) \**Alchemilla* (p. 208)
11. Stems  $\pm$  *hairy*; fruiting-receptacle *spiny* and *burr-like*; stamens 2-10 (in male flowers) *Acæna* (p. 209)  
 Stems *glabrous*; fruiting-receptacle *without* spines, wrinkled or pitted; stamens *numerous* (occasional in cooler S. & E. districts) \**Poterium* (p. 209)

## RUBUS L. (1753)

1. Leaves all *simple*, cordate at base, shortly 3- or rarely 5-lobed, *rugulose*, brownish-tomentose beneath; flowers in *congested masses*; calyx-lobes villous, acuminate, never reflexed; petals white, broadly elliptic,  $\pm$  4 mm. wide; aggregate fruit red,  $\pm$  globular (tall scrambler or climber of far E. Gippsland jungles):

*R. hillii* F. Muell. in *Trans. phil. Inst. Vict.* 2: 67 (1858).

*R. moluccanus* sens. Ewart *Flor. Vict.* 568 (1931), atque auctt. Aust. al., non L. (1753).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 471, col. (1968).

*Vern.*: Queensland Bramble. *Distr.*: SWZ—also N.S.W., Qd.

—Leaves *compound*; flowers in *open* inflorescences 2

2. Leaves *digitate* (the terminal leaflet usually on a longer stalk than remainder); calyx-lobes reflexing; aggregate fruit *black* when ripe, *inseparable* from the receptacle (large, scrambling introduced shrubs 5-15 ft. high) 6

Leaves distinctly *pinnate* or, if ever appearing *digitate* (with only 3 leaflets), then the *red* aggregate fruit *falling away* from its receptacle when ripe 3

3. Stems, petioles, inflorescences and calyces densely covered with *long-stalked red glands* (or gland-tipped setæ); leaves white beneath, *very shortly dentate*, the broadly ovate terminal leaflet 8-10 cm. wide; petals deep rose-pink, *erect*, much shorter than the long-acuminate sepals (to 15 mm.) (occasional escape in south-central mountain areas):

\**R. phœnicolasius* Maxim. in *Bull. Acad. Sci. St. Petersburg*. 17: 160 (1871).

*Illust.*: *Curtis's bot. Mag.* 106: t. 6479, col. (1880); Bailey, *Standard Cycl. Hort.* 3: fig. 3492 (1935); Nakai, *Flor. Sylv. Koreana* Pt. 7: t. 28 (1918).

*Vern.*: Wine Raspberry. *Distr.*: S—also N.Z.

—Glandular hairs *absent*, the branches finely pubescent or  $\pm$  glabrous; leaves sharply and often *deeply serrate*, the terminal leaflet rarely > 6 cm. wide (usually much less) 4

4. Leaflets *green* beneath, broad-lanceolate, *acuminate*; petals white, 5-8 mm. wide; aggregate fruit dark red, *ovoid-oblong*, 15-20 mm. long, with *very numerous* (>100) drupelets (weakly erect shrub of eastern jungles):

*R. rosifolius* Sm. *Plant. Icon.* t. 60 (1789).

*Illust.*: Smith (*l.c.*); *Curtis's bot. Mag.* 113: t. 6970, col. (1887); Everist, *Common Weeds Farm & Pasture* fig. 48 (1957); Hooker, *Icon. Plant.* 4: t. 349 (1841); *Qd agric. J.* 17: t. 2 opp. 27 (1906); Marloth, *Flor. S. Afr.* 2: t. 15, col. (1925)—fruit.

*Vern.*: Rose-leaf Bramble. *Distr.*: WZ—also N.S.W., Qd., N.G.

—Leaflets *whitish* beneath, *not* acuminate, petals 3-4 mm. wide; aggregate fruit *globular*, red or orange, the drupelets < 50 (often much less) 5

5. Prickles strong, *hooked*; lateral veins of leaflets *distant*, in < 6 pairs; petals *rosy-red or pink*, much shorter than the reflexing sepals; young drupelets *glabrous* (widespread trailer):

*R. parvifolius* L. *Spec. Plant.* 2: 1197 (1753).

*R. triphyllus* Thunb. *Flor. japon.* 215 (1784).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 417, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 556 A-C (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 52 (1886); Mueller, *Plants indig. Colon. Vict.* t. 15 (1864/5), as *R. macropodus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 188 (1970), as *R. triphyllus*.

*Vern.*: Small-leaf Bramble. *Distr.*: DEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.



—Prickles slender, *straight*, on  $\pm$  pruinose, pithy canes; lateral veins of leaflets rather close and parallel, in 6 or more pairs; petals *white*, about as long as the erect or spreading sepals; young drupelets *pubescent* (erect, occasional garden escape):

\**R. idæus* L. *Spec. Plant.* 1: 492 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 10 (1955); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 148 fig. 2 col., pp. 769 & 770 (1922); Coste, *Flor. Franc.* 2: fig. 1152 (1903).

*Vern.*: Raspberry. *Distr.*: sporadic.

# 6. \**R. fruticosus*, sp. agg.

[It has long been apparent that the name "*R. fruticosus*" cannot be satisfactorily applied to all (or perhaps any) of the widely varying populations of wild blackberries now established in Victoria. At least 8, but probably more, "microspecies" are involved, and these vary in resistance to the hormone weedicide 2,4,5-T. Samples from all over the State have been submitted to specialists in Britain for identification; but careful field studies and much more research are required before any accurate assessment can be made of the naturalized *Rubus* flora. This important project is at present under way at the Keith Turnbull Research Station of the Vermin & Noxious Weeds Destruction Board, Frankston, Vic. Even if premature, the following key to the more easily recognizable Victorian entities may have some value, and thanks are due to the late Mr. Beverley A. Miles (of Plumstead, London, England) for provision of the names here applied.]

Leaflets *deeply and irregularly dissected* into acuminate lobes, *green beneath* (where bearing scattered shiny hairs); calyx-lobes 10-15 mm. long, with  $\pm$  *leaf-like tips*; petals white, elliptic, sometimes  $\pm$  trifid; fruit oblong, relatively large:

\**R. laciniatus* Willd. *Hort. berol.* 2: t. 82 (1806).

*Illust.*: Parsons, *J. Dep. Agric. Vict.* 56: 170 (1958); Davey, *J. Dep. Agric. Vict.* 20: 479 (1922); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 773 (1922); Abrams, *Ill. Flor. Pacific States* 2: fig. 2501 (1944).

*Vern.*: Cut-leaf Bramble. *Distr.*: JKNTZ—also S.A., Tas., N.S.W.

—Leaflets *irregularly toothed*, never lacinate, often whitish beneath; calyx-lobes <10 mm. long, *never leaf-like* 7

7. Stems, petioles and inflorescence beset with *abundant stalked glands* equal in length to the setæ and smaller pricklets; leaves *green* and smooth beneath, except for very short, scattered, shining hairs (terminal leaflet broadly ovate); prickles *slender*, almost straight, to 5 mm. long; petals white (Otways & far S.W.):

\**R. rosaceus* Weihe & Nees ex Bluff & Fingerh. *Compend. Flor. Germ.* 1: 685 (1821).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 22 (1955); Trower & Watson, *Rep. bot. (Soc.) Exch. Cl. Manchr* 1928: [tt. 21 & 22] (1929); Coste, *Flor. Franc.* 2: fig. 1195 (1903).

*Vern.*: Blackberry. *Distr.*: EK.

—As for the last, but glands very *sparse*, stems and inflorescences shortly villous, underside of leaflets microscopically *tomentose* and prickles rather *stout* (Otway & Strzelecki Ranges):

\**R. vestitus* Weihe & Nees ex Bluff & Fingerh. *Compend. Flor. Germ.* 1: 684 (1821).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 18 (1955); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: fig. 1098 a-h (1922); Coste, *Flor. Franc.* 2: fig. 1187 (1903).

*Vern.*: Blackberry. *Distr.*: KT.

—Glandular hairs *absent*; leaves often *grey or whitish* beneath; petals suborbicular (8-10 mm. wide) 8

8. Stems *pruinose*, grooved and *strongly angular*, with numerous large coarse hooked prickles (6-10 mm. long); leaflets *convex*,  $\pm$  coriaceous, dark green and often *shining* above, white-tomentose beneath, usually with  $\pm$  *undulate margins*; petals and stamens commonly pink, the latter short ( $\pm$  4 mm.):

\**R. ulmifolius* Schott f. in Oken in *Isis* fasc. 5: 821 (1818).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 16 (1955); Coste, *Flor. Franc.* 2: fig. 1174 (1903); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: fig. 1094 (1922); Everard, *Wild Flowers World* t. 9 fig. B, col. (1970).

*Vern.*: Blackberry. *Distr.*: DEJ—also S.A.

—Stems *not* or rarely *pruinose*, sometimes angular but not strongly so; leaflets *never convex*, rarely shining 9

9. Terminal leaflet flat, very *broadly ovate*; stems slightly *angular*, almost *glabrous*; panicle broad and leafy, with strongly falcate prickles; petals *pink*,  $\pm$  *notched*; staminal filaments *pink*, *short* (3-4 mm.); aggregate fruits *oblong*, with *numerous* (>30) drupelets:

\**R. selmeri* Lindeb. *Herb. Rub. Scand.* n. 33 (1884).

*Vern.*: Blackberry. *Distr.*: J (Creswick).

[Perhaps, but not demonstrably, identical with *R. nemoralis* P. J. Muell. in *Flora* 41: 139 (1858).]

—As for the last, but stems *round* and *hairy*, leaflets somewhat *concave* with  $\pm$  *undulate margins* and the small *globular* fruits with few drupelets (up to 20):

\**R. ulmifolius* Schott. f.—hybrid derivatives.

*Vern.*: Blackberry. *Distr.*: EJKMNPRSTV—also S.A., N.S.W.

—Terminal leaflet *elliptic-ovate*; panicle often narrow; petals *entire*, usually *white*; staminal filaments >4 mm. long; aggregate fruits *globoid*, with relatively few drupelets (15-30) 10

10. Leaves shortly toothed, rather *coriaceous*, typically *white* beneath with a matted pubescence; prickles *confined to angles*, often *hooked*; hairs of inflorescence usually darkish and  $\pm$  *septate* (very widespread species):

\**R. procerus* P. J. Muell. ex Geneviev in *Mém. Soc. Acad. Maine-et-Loire* 24: 209 (1868).

*Vern.*: Blackberry. *Distr.*: NPSUVWZ—also S.A., N.S.W., A.C.T., N.Z.

[Although Victorian material, submitted to a specialist in Britain by the writer during 1961, was identified as *R. chloocladus*, the application of this name is still open to question. What is almost certainly the same taxon in S.E. New South Wales is referred to *R. vulgaris* Weihe & Nees (1825) by botanists in that State.]

—Leaves deeply toothed (the terminal leaflet often lobed),  $\pm$  pedate, submembranous, green and very sparsely hairy beneath; prickles usually straight, scattered on the round, almost glabrous stems; hairs of inflorescence pale, not noticeably septate; staminal filaments 6-8 mm. long (long-trailing bushes, the inflorescence sometimes slightly glandular):

\**R. cissburiensis* Barton & Riddels in *J. Bot., Lond.* 69: 238 (1931).

*Vern.*: Blackberry. *Distr.*: KNWZ.

[This taxon was considered identical with *R. separinus* Geneviev in W. C. R. Watson's *Handb. Rubi Gt. Brit. & Irel.* 93 (1958).]

—As for the last, but leaves greyish beneath (manifestly wrinkled when young), stems hairy and slightly angular, and filaments only 5-6 mm. long ( $\pm$  erect, sometimes forming dense mounds):

\**R. polyanthemus* Lindeb. in *Bot. Notiser* 1883: 105 (1883).

*Vern.*: Blackberry. *Distr.*: KNSTZ.

[Occasionally cultivated, and sometimes spreading in old gardens, are the following brambles: *R. moluccanus* L. (very similar to the indigenous *R. hillii*, but with more open inflorescence and fewer hooked prickles on the petioles and midribs of leaves); *R. loganobaccus* L. H. Bailey (the red-fruited, downy-leaved Loganberry—a hexaploid hybrid between the N. American *R. vitifolius* and *R. idæus* subsp. *strigosus*), and several other horticultural hybrids known as "Boysenberry", "Youngberry", "Lawtonberry" etc.]

### \**ROSA* L. (1753)

\**R. rubiginosa* L. *Mant. Plant.* 2: 564 (1771).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 9: t. 24 (1956); Molloy, *N.Z. J. Agric.* 109: [107], col. (1964), as "sweet brier"; Wauer in Ewart, *Weeds . . . Vict.* t. opp. 26, col. (1909); Abrams, *Ill. Flor. Pacific States* 2: fig. 2502 (1944); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: 1018 fig. 1224 e-1 (1922), as *R. eglanteria*; Coste, *Flor. Franc.* 2: fig. 1222 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 187 (1970); Everard, *Wild Flowers World* t. 9, col. fig. A (1907).

*Vern.*: Sweet Briar. *Distr.*: DHJKMNPRSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[Garden roses are commonly grafted onto stock of the hardy Eurasian *Rosa canina* L. (Dog Rose) which may survive and come up after the graft has died.

It is sometimes seen, almost naturalized (apparently quite so in Tasmania and around Adelaide, S.A.), along roads, hedge-lines or fences in the country, as a glabrous shrub with long arching branches and nodding, pinkish, single or semi-double flowers. Other species-roses, occasionally persisting on old estates include red-flowered highly fragrant Cabbage Rose (*R. centifolia* L.), small-flowered creamy Banksia Rose (*R. banksiæ* R. Br.), and various hybrid "ramblers".]

\*CRATÆGUS L. (1753)

\**C. monogyna* N. J. Jacq. *Flor. austriac.* 3: 50, t. 292 fig. 1 (1775).

*C. oxyacantha* L. *Spec. Plant.* 1: 477 (1753)—*pro parte*.

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 9: t. 39 (1956); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 147 fig. 5 & 6, col. (1922); Coste, *Flor. Franc.* 2: fig. 1254 (1903).

*Vern.*: Hawthorn. *Distr.*: HJNPRWZ—also N.S.W.

\*PRUNUS L. (1753)

\**P. cerasifera* Ehrh. *Beitr. Naturk.* 4: 17 (1789)

*Illust.*: Fitch in *Curtis's bot. Mag.* 97: t. 5934, col. (1871); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: 1101 (1922)—subsp. *divaricata*.

*Vern.*: Cherry-plum. *Distr.*: S.

[Other Eurasian species of *Prunus*, that sometimes appear where stones or kernels have been discarded from the fruits of various cultivars, include the following: *P. amygdalus* Batsch (Almond), *P. persica* (L.) Batsch (Peach), *P. armeniaca* L. (Apricot), *P. cerasus* L. (Sour Cherry) and *P. lauro-cerasus* L. (Cherry-Laurel). None of these is truly naturalized in the State, but the last has been widely planted in earlier times as a hedge plant on the good volcanic loams between Gembrook and the Dandenong Ranges. W. M. Curtis, *Student's Flor. Tasm.* 1: 174 (1956), records *P. insititia* L. (the Bullace or Damson Plum) as a widespread, occasional introduction in hedges of Tasmania.]

\*MALUS Mill. (1759)

\**M. sylvestris* (L.) Mill. *Gdnrs Dict.* ed. 8: n. 1 (1768).

*Pyrus Malus* L. var. *sylvestris* L. *Spec. Plant.* 1: 479 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 9: t. 35 (1956); *Nat. geogr. Mag.* 31: 501 (1917); Robbins, *Botany Crop Plants* 373, 376 & 380 (1917).

*Vern.*: Apple (Wild Crab). *Distr.*: KRS.

[The trees naturalized in Victoria would doubtless all belong to the subsp. *mitis* (Wallr.) Mansf.—descended from cultivated apples, not directly from wild crabs.]

GEUM L. (1753)

*G. urbanum* L. *Spec. Plant.* 1: 500 (1753).

*Illust.*: Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 49, col. (1967).

*Vern.*: Common Avens (Kopata—Maori name). *Distr.*: JNRSVWZ—also Tas., N.S.W., A.C.T., N.Z.

[Occurrences (including Australian) in the Southern Hemisphere are referable to the var. *strictum* Hook. f. *Handb. N.Z. Flor.* 55 (1864), presumed to differ from the typical European form in its more robust habit (2-3 ft. high) and larger flowers ( $\pm$  2 cm. wide).]

\**POTENTILLA* L. (1753)

1. Leaves *pinnate*, with 7-12 pairs of oblong leaflets, densely *silver-silky* (at least beneath); flowers *solitary*, axillary, long-stalked (rosetted herb, emitting long, creeping and rooting stolons):

\**P. anserina* L. *Spec. Plant.* 1: 495 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 35 (1955); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 149 fig. 4, col. (1922); Coste, *Flor. Franc.* 2: fig. 1126 (1903).

*Vern.*: Silverweed. *Distr.*: DET—also S.A., Tas., N.S.W.

—Leaves *palmate*, with 3-7 leaflets, *green*, *sparsely hairy* to subglabrous 2

2. Stems stiffly *erect*, 1 ft. high or more; leaflets oblanceolate, usually  $> 3$  cm. long; flowers *numerous*, in terminal dichotomous cymes:

\**P. recta* L. *Spec. Plant.* 1: 497 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 150 fig. 3, col. (1922); Poinso in Bonnier *Flor. compl. Franc., Suisse & Belg.* 3: fig. 935, col. (1914); Coste, *Flor. Franc.* 2: fig. 1136 (1903).

*Vern.*: Sulphur Cinquefoil (Erect Potentil). *Distr.*: DEJRTVW—also N.S.W., N.Z.

—Stems *prostrate*, from a persistent basal rosette, stoloniferous and *rooting at nodes*; leaflets obovate,  $< 3$  cm. long; flowers *solitary* on long pedicels, never cymose:

\**P. reptans* L. *Spec. Plant.* 1: 499 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 8: t. 34 (1955); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 149 fig. 6, col. (1922); Coste, *Flor. Franc.* 2: fig. 1128 (1903).

*Vern.*: Creeping Cinquefoil. *Distr.*: N (6 miles S. of Daylesford)—also N.Z.

\**DUCHESNEA* Sm. (1811)

\**D. indica* (Andr.) Focke in *Natürl. PflFam.* 3\*: 33 (1888).

*Fragaria indica* Andr. *Bot. Repos.* 7: t. 479 (1807).

*Illust.*: Andrews (l.c.); Abrams, *Ill. Flor. Pacific States* 2: fig. 2456 (1944); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 907 (1922).

*Vern.*: Indian Strawberry. *Distr.*: ST—also N.S.W., N.Z.

\**ALCHEMILLA* L. (1753)

\**A. xanthochlora* Rothm. in *Repert. Spec. nov. Regn. veg.* 42: 167 (1937).

*A. vulgaris* sens. Ewart *Flor. Vict.* 571 (1931) atque auctt. var., *non strict.* L. (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 9: t. 3 (1956).

*Vern.*: Lady's Mantle. *Distr.*: SV—also N.S.W.

## APHANES L. (1753)

1. Fruiting-calyx green, 2-2.5 mm. long, constricted at neck and  $\pm$  bottle-shaped; sepals 4, almost erect, up to  $\frac{1}{4}$  the total length of flower; epicalyx quite microscopic:

\**A. arvensis* L. *Spec. Plant.* 1: 123 (1753).

*Alchemilla arvensis* (L.) Scop. *Flor. carniol.* ed. 2, 1: 115 (1772).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 560 (1948), as *Alchemilla arvensis*; Ross-Craig, *Drawings Brit. Plants* 9: t. 7 (1956); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 153 fig. 1, col. (1922), as *Alchemilla arvensis*.

*Vern.*: Parsley Piert. *Distr.*: ACDEHJMNRSTVW—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Fruiting-calyx brown or reddish, campanulate (not constricted); sepals  $\pm$  spreading; from  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of flower 2

2. Flower usually <2 mm. long ( $\pm$  1.5 mm.), not oblique; sepals 4,  $\pm$  3 times as long as lobes of epicalyx:

*A. australiana* (Rothm.) Rothm. in *Kew Bull.* 1938: 270 (1938).

*Alchemilla australiana* Rothm. in *Repert. Spec. nov. Regn. veg.* 38: 42 (1935).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 189 A (1970).

*Vern.*: Australian Piert. *Distr.*: BEHJN—also S.A., A.C.T.

—Flower 2-2.5 mm. long,  $\pm$  oblique at base and distinctly pedicellate; sepals 5, >4 times the length of minute epicalyx-lobes (leaves on slender petioles):

*A. pentamera* Rothm. in *Kew Bull.* 1938: 270 (1938).

*Vern.*: Five-part Piert. *Distr.*: C (Little Desert & Bringaibert)—?endemic.

## \*POTERIUM L. (1753)

\**P. polygamum* Waldst. & Kitaib. *Descr. & Icon. Plant. rar. Hungar.* 2: 217, t. 198 (1805).

*P. sanguisorba* sens. Ewart *Flor. Vict.* 573 (1931), non strict L. (1753).

*Illust.*: Curtis, *Student's Flor. Tasm.* 1: 173 (1956); Black, *Flor. S. Aust.* ed. 2: fig. 561 (1948), as *P. sanguisorba*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: 940 fig. 1185 e-g (1922), as *Sanguisorba minor* subsp. *muricata*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 190 (1970).

*Vern.*: Salad Burnet. *Distr.*: KNTV—also S.A., Tas., N.S.W., A.C.T., N.Z.

## ACÆNA Mutis ex L. (1771)

1. Leaflets in 3-4 pairs; flowers in a dense globular head (finally 1-2 cm. diam.) terminating a long naked peduncle; anthers 2, creamy; fruiting receptacle prominently 4-sided, the summit of each angle bearing a slender glabrous spine that is much longer than receptacle and has retrorse apical barbs  $\pm$  0.5 mm. long:

*A. anserinifolia* (Forst. & Forst. f.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 602 (1917).

*Ancistrum anserinaefolium* Forst. & Forst. f. *Charact. Gen. Plant.* 4, t. 2 (1776);

*Acæna sanguisorbæ* (L., ut *Ancistrum* sp.) Vahl *Enum. Plant.* 1: 294 (1827)—*nom. illegit.*

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 361, col. (1968); Rosser, *Wildflowers Vict.* 95, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 556 1 (1948)—fruit, as *A. sanguisorba*; Ewart, *Flor. Vict.* fig. 234 (1931), as *A. sanguisorba*; Davey, *J. Dep. Agric. Vict.* 21: 188 (1923), as *A. sanguisorbæ*; Lee, *Wild Life (Melb.)* 8: 145 (1946).

*Vern.*: Bidgee-widgee. *Distr.*: ACDEJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z., naturalized in U.K.

—Leaflets in 6-10 pairs; flowers in a long *interrupted spike* (5-15 cm.), the peduncle  $\pm$  leafy; anthers usually 8-10, *dark purplish*; fruiting receptacle *ovoid*, bearing *several to many*, often pubescent spines *not* or hardly longer than receptacle and with microscopic barbs 2

2. Lower surface of leaflets with *hairs confined to major veins* and/or midrib, the upper surface *glabrous to sparsely hairy*; fruit with slender unequal spines, often bearing 3-4 *longitudinal ridges* (formed from the concrescent thickened bases of largest spines):

**A. echinata** Nees in Lehm. *Plant. Preiss.* 1: 95 (1844).

*Vern.*: Sheep's Burr. *Distr.*: CDEHJMNPSWX—also W.A., S.A., Tas., N.S.W.

—Lower surface of leaflets *densely and uniformly hairy*, the upper surface *moderately and appressedly hairy*; fruit *lacking longitudinal ridges* 3

3. Spines of fruit  $\pm$  equal:

**A. agnipila** Gangoder in *Bull. Soc. bot. Franc.* 59: 706 (1912).

*Vern.*: Sheep's Burr. *Distr.*: DEHJKMNPSTVWXZ—also W.A., S.A., Tas., N.S.W., S.E. Qd, N.Z. (introd.).

—Spines of fruit *unequal* (3-6 manifestly longer than remainder):

**A. ovina** A. Cunn. in *Field Geogr. Mem. N.S.W.* 358 (1825).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 556 D-H (1948); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 43 left (1940); Burbidge, *Flor. Aust. Cap. Terr.* fig. 191 (1970).

*Vern.*: Sheep's Burr. *Distr.*: EJMRSTVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z. (introd.).

[See "Revision of the *Acaena ovina* . . . Complex in Australia" in *Trans. roy. Soc. S. Aust.* 93: 91-109 (1969), by A. E. Orchard who establishes: the vars. *robusta*, *subglabralyx*, *retrorsumpilosa* and *tylacantha* of *A. echinata*; vars. *tenuispica*, *aequispina* and *protenta* of *A. agnipila*; and var. *velutina* of *A. ovina*—all in Victoria. A widespread natural hybrid in S.E. Australia is *A. X anserovina* Orchard l.c. 104 (1969); it differs from parent *A. anserinifolia* in having 2-8 purple stamens and  $>4$  fruit-spines, and from *A. ovina* in its globular inflorescence.]

## Family MIMOSACEÆ

Flowers *pedicellate*, in greenish-yellow spikes >2 cm. diam.; stamens 10- >1 cm. long,  $\pm$  united into a tube at the base (almost glabrous shrub or small tree to 20 ft. high; foliage always bipinnate; pinnulæ >1.5 mm. wide; primary nerves dividing pinnulæ unequally and always close to the upper margin) \**Albizia*

Flowers *sessile*, in golden, yellow or creamy-white spikes <1 cm. diam. or in globular heads or sessile clusters; stamens >10, <1 cm. long, *free* except at their extreme base (foliage bipinnate, reduced to phyllodes or absent; pinnulæ, if present on mature plants, <1.5 mm. wide, or, if more, then primary nerves dividing them  $\pm$  equally) *Acacia*

\**ALBIZIA* Durazzini (1772)—etymol. orig.

\**A. lophantha* (Willd.) Benth. in Hook. *Lond. J. Bot.* 3: 86 (1844).

*Acacia lophantha* Willd. *Spec. Plant.* 4: 1070 (1806);

*Mimosa distachya* Vent. *Descr. Plant. Nouv. Jard.* t. 20 (1800-01), non Cav. (1795-96);

*Albizzia distachya* Macbride in *Contr. Gray Herb. Harv.* new ser. 59: 3 (1919).

*Illust.*: Ventenat (*l.c.*); Black, *Naturalised Flor. S. Aust.* 59 (1909).

*Vern.*: Cape Wattle (Crested Wattle). *Distr.*: ENPTW—endemic to W.A. and introduced into S.A., N.S.W. and Tas.

## ACACIA Mill. (1754)

1. Mature foliage always *bipinnate*; petioles never conspicuously flattened 100  
Mature foliage *reduced to phyllodes or absent*, or, if bipinnate foliage present, then with at least some phyllodes conspicuously flattened 2
2. Phyllodes *present, articulated* at their base, *never* decurrent 4  
Phyllodes *absent*, or if ever present, then *not* articulated but *broadly decurrent* along the stems 3
3. Phyllodes *absent*; branches *terete* and coarsely striate; ultimate branchlets very rigid and spinescent; flowers in *sessile or shortly pedunculate clusters* of 3-8 along the branches (low erect or spreading shrub 1-6 ft. high; branches yellow- or grey-green; flowering Aug.-Oct.):

*A. spinescens* Benth. in Hook. *Lond. J. Bot.* 1: 323 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 1: [t. 2] (1887); Galbraith, *Vict. Nat.* 78: 327 (1962); Rogers, *Field Guide Vict. Wattles* 93 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 85, col. (1968).

*Vern.*: Spiny Wattle. *Distr.*: ABCD—also S.A., N.S.W.

—Phyllodes broadly decurrent, *flat*, many-nerved, rigid, *spinescent and curved*; flowers in pedunculate spikes usually 2-3 cm. long (spreading



shrub or small tree to 10 ft. high and 20 ft. across; phyllodes 1.6-4 cm. long and 2-10 mm. wide, falcate and decurrent for 1-2 cm.; flowering Aug.-Oct.; very rare and localized in Victoria where known only from the Warby Range):

**A. triptera** Benth. in Hook. *Lond. J. Bot.* 1: 325 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 9: [t. 1] (1888); Baker, *Proc. Linn. Soc. N.S.W.* 22: t. 25 (1898), as *A. triptera* var. *Lyndoni*; Rogers, *Field Guide Vict. Wattles* 91 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 198, col. (1968).

*Vern.*: Spur-wing Wattle. *Distr.*: R—also Qd, N.S.W.

4. Phyllodes *whorled*, or, if some alternate and/or fascicled, then the remainder on the same branch truly whorled and the flowers in *spikes or ovoid heads* (prickly shrub or tree 4-20 ft. high; phyllodes  $\pm$  acicular or distinctly flattened and then narrow-lanceolate, 6-20 mm. long and 1-5 mm. wide, pungent-pointed; flowering June-Nov.):

**A. verticillata** (L'Hérit.) Willd. *Spec. Plant.* 4: 1049 (1806).

*Mimosa verticillata* L'Hérit. *Sert. Angl.* 30 (1789).

*Illust.*: Ewart, *Handb. For. Trees* t. 81 (1925); Galbraith, *Vict. Nat.* 76: 262 (1960); Rogers, *Field Guide Vict. Wattles* 20 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 390, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 478, 478 a & b (1971).

*Vern.*: Prickly Moses. *Distr.*: CDEJKNPSTWZ—also S.A., N.S.W., Tas.

[In Victoria two varieties of this highly polymorphic species are worthy of consideration although each grades almost imperceptibly into the typical variety. The var. *ovoidea* (Benth., *ut sp.*) Benth. *Flor. aust.* 2: 335 (1864), is characterized by a more or less prostrate habit, alternate and fascicled (or  $\pm$  whorled) phyllodes and short or sometimes ovoid flower-spikes. It occurs in the Grampians and at Anglesea, Frankston, Wilsons Promontory as well as a few other stations along the Victorian coast and extends to Tasmania. The var. *latifolia* DC. *Prodr.* 2: 454 (1825), figured by Hooker in *Curtis's bot. Mag.* 59: t. 3195, col. (1832), under *A. ruscifolia*, differs from the typical in its much broader phyllodes (up to 5 mm. wide) and its larger and denser flower-spikes. The latter variety is known from only Sunday Island and Wilsons Promontory in Victoria but is much more frequent in Tasmania.]

—Phyllodes *alternate*, *never truly whorled* but, if fascicled, then flowers always in *globular heads* 5

5. Phyllodes distinctly *flattened*; flowers in globular heads or spikes of >20 flowers 15

Phyllodes *terete*, acicular or angular, *never* distinctly flattened; flowers in globular heads or sessile spikes of <15 flowers 6

6. Phyllodes with >4 nerves,  $\pm$  *terete* 11

Phyllodes with <5 nerves, often strongly 4-angled with 1 nerve at each angle,  $\pm$  *acicular* 7

7. Ultimate branchlets *terete*, phyllodes <2 cm. long 9

Ultimate branchlets conspicuously *angled* and/or phyllodes >2 cm. long 8

8. Flowers 12-25 in *globular heads* on peduncles exceeding 5 mm.; margins of phyllodes *smooth*; ultimate branchlets usually green or greenish-brown and often striped with prominent yellowish ridges, glabrous or almost so; phyllodes mostly *straight*, rigid and pungent-pointed (widely distributed erect or spreading shrub 2-8 ft. high; phyllodes 1.2-6 cm. long and 1-3 mm. wide, sometimes slightly flattened; maximum flowering Aug.-Oct.):

*A. diffusa* Lindl. in *Edwards's bot. Reg.* 8: t. 634, col. (1822).

*Illust.*: Lindley (*l.c.*); Galbraith, *Vict. Nat.* 76: 322 (1960); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 2 (1967); Rogers, *Field Guide Vict. Wattles* 47 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 322, col. (1968).

*Vern.*: Spreading Wattle. *Distr.*: CDHJKMNPRSTVWXZ—also N.S.W., A.C.T., Tas.

—Flowers 8-12 in short *sessile spikes*; margins of phyllodes *asperulate*; ultimate branchlets usually grey or reddish-brown, never prominently striped,  $\pm$  sprinkled with minute appressed hairs; phyllodes *curved*,  $\pm$  flexible and often ending in a small hard and sometimes hooked point (erect shrub 3-10 ft. high; phyllodes about 5-10 cm. long and 1-2 mm. wide: flowering Oct.-Nov.; apparently endemic on Pine Mountain, far N.E. Vic.):

*A. phasmoides* J. H. Willis in *Muelleria* 1: 121 t. 10 (1967).

*Illust.*: Willis (*l.c.*).

*Vern.*: Phantom Wattle. *Distr.*: V.

9. Ultimate branchlets minutely but distinctly *hairy*, usually dark or reddish-brown; petioles clearly visible at the base of the phyllodes and rarely straight; phyllodes usually conspicuously *reflexed* or, if not, then never all subtending equal or nearly equal angles; stipules present, small, setaceous and persistent (low shrub <18" high, rarely more; phyllodes about 5-12 mm. long and 1 mm. wide; flowering late Aug.-early Nov.):

*A. aculeatissima* Macbride in *Contr. Gray Herb. Harv. new ser.* 59: 6 (1919).

*A. tenuifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 37 (1855), *non* (L.) Willd. (1806).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 1: [t. 8] (1887), as *A. tenuifolia*; Galbraith, *Vict. Nat.* 78: 265 (1962); Rogers, *Field Guide Vict. Wattles* 44 (1968).

*Vern.*: Thin-leaf Wattle (Snake Wattle). *Distr.*: CDHJMNSZ—also N.S.W.

—Ultimate branches *glabrous*, sometimes  $\pm$  greyish-white, or, if hairy, then petioles (if visible) appearing  $\pm$  straight at the base of the phyllodes; phyllodes spreading or ascending, all subtending equal or nearly equal angles, *never* significantly reflexed; stipules, if present, small, setaceous, persistent or deciduous

10. Phyllodes usually averaging both  $<10$  mm. long (rarely longer) and  $>5$  per cm., usually *broadening towards and swollen near the base*; branchlets  $\pm$  *hairy*, rarely quite glabrous, sometimes  $\pm$  brown or reddish-brown; stipules always present, mostly  $>0.8$  mm. long,  $\pm$  persistent; usually an erect shrub 3-6 ft. high or more, without wiry branches; flowers usually *creamy-yellow*, appearing early March-Sept.:

**A. ulicifolia** (Salisb.) A. B. Court in *Vict. Nat.* 73: 173 (1957).

*Mimosa ulicifolia* Salisb. *Prodr. Stirp.* 324 (1796);

*A. juniperina* (Vent.) Willd. *Spec. Plant.* 4: 1049 (1806).

*Illust.*: Ventenat, *Jard. Malmaison* 2: t. 64, col. (1804), as *Mimosa juniperina*; Banks & Solander, *Ill. Bot. Cook's Voy.* 1: t. 82 (1900), as *A. juniperina*; Rogers, *Field Guide Vict. Wattles* 43 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 351, col. (1968); Baglin & Mullins, *Aust. Wattles* 18, col. (1968); Scarth-Johnson, *Wildflowers Warm E. Coast* 33, col. (1967).

*Vern.*: Juniper Wattle. *Distr.*: CDJNSTVW—also Qd, N.S.W., A.C.T., Tas.

—Phyllodes usually averaging both  $>10$  mm. long and  $<5$  per cm., *neither significantly broadening towards nor swollen near the base*; branches usually *glabrous* or nearly so, sometimes grey or greyish-white; stipules, if present, mostly  $<0.8$  mm. long, soon becoming deciduous; usually a spreading shrub with wiry branches  $<3$  ft. high; flowers usually deep *orange-yellow*, appearing Sept.-Nov.:

**A. brownii** (Poir.) Steud. *Nom. bot.* 2 (1821).

*A. acicularis* R. Br. in Ait. f. *Hort. kew.* ed. 2 5: 460 (1813), *non* Humb. et Bonpl. ex Willd. (1809);

*Mimosa Brownei* Poir. in *Encycl. méth. (Bot.) Suppl.* 5: 530 (1817).

*Illust.*: Galbraith, *Vict. Nat.* 77: 223 (1960); Rogers, *Field Guide Vict. Wattles* 42 (1968).

*Vern.*: Heath Wattle. *Distr.*: NPRSTWZ—also N.S.W.

11. Nerves  $<7$  to each phyllode; phyllodes  $<3$  cm. long and  $<0.8$  mm. diam., uncinat, usually  $\pm$  *sigmoid*, neither straight nor rigid, blunt or with a minute point,  $\pm$  resinous:

**A. wilhelmiana** F. Muell. [See p. 233].

—Nerves  $>6$  to each phyllode; phyllodes usually  $>2$  cm. long and  $>0.8$  mm. diam. rarely uncinat or sigmoid, usually *straight* or gently curved, usually pungent-pointed and rigid, rarely resinous 12

12. Branches and phyllodes *asperulate*; pods *intestiniform* (spreading shrub 3 ft. high; phyllodes about 2-4 cm. long and 1 mm. diam., pungent and rigid; flowering Mar.-Sept.; confined in Vic. to Diapur district):

**A. enterocarpa** R. V. Smith in *Vict. Nat.* 73: 171 (1957).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 71 (1968).

*Vern.*: Jumping-jack Wattle. *Distr.*: C—also S.A.

—Neither branches *nor* phyllodes asperulate; pods sometimes  $\pm$  coiled or twisted but *never* intestiniform 13

13. Ultimate branchlets *terete* or almost so, usually reddish-brown; phyllodes *very rigid* with a hard, sharp point, straight, usually spreading, <3.5 cm. long, falling readily and leaving prominent yellowish- or pale-brown  $\pm$  *circular or semicircular scars* (spreading shrub or tree up to 15 ft. high; phyllodes with 8-15 or more nerves and 1.0-1.5 mm. diam.; flowering Aug.-Nov.; northern Mallee):

*A. colletioides* Benth. in Hook. *Lond. J. Bot.* 1: 336 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 1: [t. 4] (1887); Hill, *Aust. Plants* 1\*: 1, col. (1961); Rogers, *Field Guide Vict. Wattles* 69 (1968).

*Vern.*: Wait-a-while. *Distr.*: AFG—also W.A., Cent. Aust., S.A., N.S.W.

—Ultimate branchlets  $\pm$  *angular, ribbed*, usually *greyish-green*; phyllodes  $\pm$  *flexible* with a small scarcely sharp point, usually both curved and ascending, mostly >4 cm. long, neither falling readily *nor* leaving prominent scars 14

14. Phyllodes with >12 nerves, very brittle and *snapping easily and cleanly* ( $\pm$  erect or spreading shrub to 10 ft. high; phyllodes usually 4-8 cm. long and 0.8-1.0 mm. diam., usually gently curved and ascending; flowering Aug.-Oct.; presumed extinct in Victoria where known from only two collections, viz.—Ouyen, Sept. 1913 and Gerang Gerung, Oct. 1918):

*A. havilandii* Maiden in *J. roy. Soc. N.S.W.* 53: 182 (1920).

*Illust.*: Maiden, *For. Flor. N.S.W.* 7: t. 246 fig. L-s (1920); Rogers, *Field Guide Vict. Wattles* 70 (1968).

*Vern.*: Needle Wattle (Haviland's Wattle). *Distr.*: BC—also S.A., N.S.W.

—Phyllodes with <12 nerves, rather tough and *neither snapping easily nor cleanly* (erect or sometimes  $\pm$  spreading shrub 3-8 ft. high and occasionally as much across; bark often shredding; phyllodes usually 3-8 cm. long, rarely longer or shorter, 0.7-1.2 mm. diam., usually curved and ascending, rarely straight; flowering Aug.-Nov.; Mallee):

*A. rigens* A. Cunn. ex G. Don *Gen. Syst.* 2: 403 (1832).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 2: [t. 4] (1887); Galbraith, *Vict. Nat.* 78: 212 (1961); Rogers, *Field Guide Vict. Wattles* 68 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 126, col. (1968).

*Vern.*: Nealie. *Distr.*: ABCF—also S.A., N.S.W.

15. Branchlets *very rigid, tapering into hard, sharp spines*; phyllodes *quelyobli obovate*, <8 mm. long and <4 mm. wide; flower-heads *globular* (spreading shrub 2-5 ft. high; flowering July-Sept.; far N.W. Mallee):

*A. acanthoclada* F. Muell. *Fragm. Phyt. Aust.* 3: 127 (1863).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 4: [t. 6] (1887); Rogers, *Field Guide Vict. Wattles* 41 (1968).

*Vern.*: Harrow Wattle. *Distr.*: AF—also W.A., S.A., N.S.W.

- Branchlets *never* tapering into hard sharp spines; phyllodes rarely obliquely obovate, usually >8 mm. long; flower-heads globular or spicate 16
16. Phyllodes with 2 or more  $\pm$  equally prominent nerves to each face 66  
Phyllodes with only 1 prominent nerve to each face but sometimes with a weaker secondary parallel nerve along most of the phyllode 17
17. Flower-heads in typical *racemes* averaging >0.5 cm. long (racemes sometimes leafy) 42  
Flower-heads axillary, or, if apparently in racemes, then axis of inflorescence <0.5 cm. long 18
18. Phyllodes distinctly *asperulate* or covered with short rigid hairs of which at least some are *glandular* (erect or spreading viscid shrub to 5 ft. high, phyllodes 0.8-3 cm. long and 2-7 mm. wide; flowers creamy-yellow, appearing July-Nov.):

*A. aspera* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 138 (1838).

*A. aspera* Lindl. var. *densifolia* (Benth.) Benth. *Flor. aust.* 2: 347 (1864).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 4: [t. 3] (1887); Rogers, *Field Guide Vict. Wattles* 31 (1968).

*Vern.*: Rough Wattle. *Distr.*: CDHMNR—also N.S.W.

[Presumptive hybrids between *A. aspera* and another species, possibly *A. montana*, have been noted in the Bendigo district. Specimens resemble the latter species so far as characters of the phyllodes are concerned, but the floral bracts bear a striking resemblance to those of *A. aspera*.]

- Phyllodes glabrous or covered with eglandular hairs 19
19. Stipules >3 mm. long, rigid, sharp, almost straight, smooth, terete and spiny (shrub or tree to 15 ft. high; phyllodes 1-3 cm. long and 3-8 mm. wide; flowering Aug.-Nov.):

*A. armata* R. Br. in Ait. f. *Hort. kew.* ed 2 5: 463 (1813).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 48 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 335, col. (1968).

*Vern.*: Hedge Wattle (Kangaroo Thorn, Acacia Hedge, Prickly Wattle). *Distr.*: CDEHJMNPRSTVW—also W.A., S.A., Qd, N.S.W., A.C.T., Tas. (introd.).

[Putative hybrids between this species and several others in the same group have been recorded from Victoria. Specimens with *A. stricta* (Andr.) Willd. as the probable second parent have been noted near Wantirna South and at Montrose. In the foothills of the Dandenongs *A. leprosa* Sieber ex DC. is thought to hybridize with *A. armata* and occurrences have been recorded from Bayswater, Croydon and Mooroolbark. A third putative hybrid with *A. ausfeldii* Regel as the second parent has been noted in the Bendigo-Heathcote district. All three populations combine the characters of their respective parents and possess  $\pm$  setaceous stipules which vary in length up to 3.5 mm. long—a feature which serves to distinguish them from their supposed parents.]

- Stipules, if present, <3 mm. long, or, if >3 mm. long, then neither rigid nor terete but usually  $\pm$  curved,  $\pm$  hairy or somewhat rough, sometimes black or almost so 20

20. Phyllodes 0.5-1.3 cm. long and 2.5 mm. wide, asymmetrical, *broadly or narrowly triangular*, usually abruptly contracted at the base and tapering into fine, straight, sharp points; upper margins of phyllodes *never* evenly curved; nerves always *nearer to the lower edge* of the phyllodes (spreading shrub 1-3 ft. high and 4 ft. diam.; flowering June-Oct.):

*A. gunnii* Benth. in Hook. *Lond. J. Bot.* 1: 332 (1842).

*A. vomeriformis* A. Cunn. ex Benth. in *l.c.*

*Illust.*: Hooker, *Flor. Tasm.* 1: t. 18, col. (1855); Galbraith, *Vict. Nat.* 78: 181 (1961), as *A. vomeriformis*; Totterdell in Burbidge, *Wattles Aust. Cap. Terr.*

t. 1 (1967), as *A. vomeriformis*; Rogers, *Field Guide Vict. Wattles* 49 (1968).

*Vern.*: Ploughshare Wattle. *Distr.*: CDHJMNPRSVWZ—also S.A., N.S.W., A.C.T., Tas.

—Phyllodes 0.4-1.4 cm. long and 1-2.5 mm. wide, *neither* broadly nor narrowly triangular; rarely abruptly contracted at the base, rarely tapering into fine, straight, sharp points; upper margins of phyllodes always *evenly curved or straight*, nerves usually dividing phyllodes  $\pm$  *evenly into 2 halves*

21. Phyllodes <5 times as long as wide 34  
Phyllodes >5 times as long as wide 22

22. Phyllodes obtuse, sometimes mucronate or even narrowly acute, occasionally uncinatate, but *never* tapering into fine, sharp firm points; stipules sometimes present 25

Phyllodes never uncinatate, always *tapering into fine, sharp, firm, straight points*; stipules obscure or minute and usually <1 mm. long 23

23. Penultimate branchlets with *prominent lenticels* or bark breaking into  $\pm$  *rectangular flakes*; phyllodes usually broadest at or near the centre (shrub or small tree to 8 ft. high; phyllodes about 1-3 cm. long and 2-4 mm. wide; flowering early Sept.-Dec.; E. highlands):

*A. siculiformis* A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 337 (1842).

*Illust.*: Hooker, *Flor. Tasm.* 1: t. 19, col. (1855), as *A. Stuartiana*; Rogers, *Field Guide Vict. Wattles* 46 (1968).

*Vern.*: Dagger Wattle. *Distr.*: RSUVW—also N.S.W., A.C.T., Tas.

—Penultimate branchlets *neither* bearing prominent lenticels *nor* bark breaking into flakes; phyllodes usually broadest at or near the base 24

24. Foliage, including flowers, at least partly viscid and usually *shining*; base of phyllodes  $\pm$  *dilated* (shrub 3-6 ft. high; phyllodes 1-2.5 cm. long and 1-2 mm. wide; flowering Aug.-Jan. and sometimes as late as March; Grampians sandstone areas):

*A. rupicola* F. Muell. ex Benth. in *Linnaea* 26: 610 (1855).

*Illust.*: Williamson in Ewart, *Flor. Vict.* 584 (1931); Galbraith, *Vict. Nat.* 78: 365 (1962); Rogers, *Field Guide Vict. Wattles* 45 (1968).

*Vern.*: Rock Wattle. *Distr.*: CD—also S.A.

—Foliage, including flowers, *neither* viscid nor shining; base of phyllodes *scarcely* dilated:

*A. diffusa* Lindl. [See p. 213.]

25. Phyllodes >3 cm. long, or, if less, then phyllodes *uncinate*, *punctate* or >3 mm. wide 27  
Phyllodes <3 cm. long and <3 mm. wide, *neither* *uncinate* nor *punctate* 26
26. Ultimate branchlets essentially *glabrous*, streaked with *scaly resinous ridges*; phyllodes quite *glabrous*, *broadening towards the apex* and bent *sharply upwards near the base*; apex of phyllodes *rounded* but sometimes with a small point; peduncles about 3 mm. long or less, appearing *farinaceous* (virgate or spreading shrub to 5 ft. high; phyllodes 7-25 mm. long and 1-2 mm. wide, linear or narrow-linear; flowers usually 3-8 per head, appearing May-Nov.):

*A. flexifolia* A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 359 (1842).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 35 (1968).

*Vern.*: Bent-leaf Wattle. *Distr.*: HMR—also Qd, N.S.W.

—Ultimate branchlets *pubescent*, *never* streaked with *scaly resinous ridges*; phyllodes sometimes *pubescent*, usually *broader near the centre* and usually *acute*; peduncles mostly 4 mm. long but often up to 8 mm. or more, *never* *farinaceous* (spreading shrub to 5 ft. high and 8 ft. across, phyllodes 7-15 mm. long and 1-3 mm. wide, linear or narrow-linear; flowers usually 10-15 per head, appearing Sept.-Oct. and sometimes March):

*A. lineata* A. Cunn. ex G. Don *Gen. Syst.* 2: 403 (1832).

*Illust.*: Hooker, *Curtis's bot. Mag.* 61: t. 3346, col. (1834); Rogers, *Field Guide Vict. Wattles* 34 (1968).

*Vern.*: Streaked Wattle. *Distr.*: BCH—also S.A., Qd, N.S.W.

27. Phyllodes sometimes *uncinate*, *never* *punctate*, resinous ridges *absent* from the upper angle of the ultimate branchlets 30  
Phyllodes *scarcely* *uncinate* but always *punctate*; resinous ridges sometimes present along the *upper angle* of the ultimate branchlets 28
28. Resinous ridges *absent* or almost so from the upper part of the ultimate branchlets (erect or weeping tree 5-40 feet high; phyllodes 3-14 cm. long and 1.5-25 mm. wide,  $\pm$  lanceolate to narrow-linear; flowering Aug.-Sept.):

*A. leprosa* Sieber ex DC. *Prodr.* 2: 450 (1825).

*Illust.*: Ewart, *Handb. For. Trees* t. 63 (1925); Galbraith, *Vict. Nat.* 77: 351 (1961); Rogers, *Field Guide Vict. Wattles* 38 (1968).

*Vern.*: Cinnamon Wattle. *Distr.*: NRSTW—also N.S.W.

[Hitherto, specimens from the Dandenongs and nearby hills have been regarded as representing typical *A. leprosa* in this State, but the concept of this species has been broadened here to encompass specimens formerly regarded as one-nerved forms of *A. verniciflua* A. Cunn. The latter material is very close to typical *A.*

*leprosa* but the former may prove to represent an undescribed species confined to the Dandenongs area. *A. leprosa* is clearly very closely related to *A. verniciflua* notwithstanding the traditional (and over-emphasized) importance attached to the number of nerves in the phyllodes, but intensive studies of all species in this group and their variants must be made before these relationships can be elucidated.

Putative hybrids between *A. leprosa* and *A. armata* R. Br. are known and have been discussed briefly under the latter species.]

—Resinous ridges *clearly present* along the upper parts of ultimate branches 29

29. Phyllodes with *numerous small anastomosing* nerves; foliage sometimes farinaceous and often greyish-green (erect shrub or tree 3-15 ft. high; phyllodes usually 4.5-13.5 cm. long and 3-15 mm. wide, linear-lanceolate to narrow-linear; flower-heads sessile or on  $\pm$  glabrous and  $\pm$  farinaceous peduncles to 8 mm. long; flowering May-Oct. and occasionally in Jan.):

*A. stricta* (Andr.) Willd. *Spec. Plant.* 4: 1052 (1806).

*Mimosa stricta* Andr. *Bot. Repos.* 1: t. 53, col. (1799).

*Illust.*: Andrews (*l.c.*); Galbraith, *Vict. Nat.* 76: 153 (1959); Rogers, *Field Guide Vict. Wattles* 37 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 353, col. (1968).

*Vern.*: Hop Wattle. *Distr.*: CDEJKNPRSTWZ—also S.A., Qd, N.S.W., Tas.

[Putative hybrids between *A. stricta* and *A. armata* R. Br. have been recorded and are discussed briefly under the latter species.]

- Phyllodes without obvious anastomosing nerves; foliage *neither* farinaceous nor greyish-green (erect shrub or small tree to 12 ft. high; phyllodes usually 1.5-6 cm. long and 1-4 mm. wide, linear to narrow-linear; flower-heads on pubescent peduncles 4-9 mm. long; flowering Aug.-Sept.; endemic to the Bendigo-Heathcote district):

*A. ausfeldii* Regel *Index Semin. Hort. Petrop.* 106 (1866).

*Vern.*: Ausfeld's Wattle. *Distr.*: M.

[Putative hybrids between this species and *A. armata* R. Br. have been recorded and have been discussed briefly under the latter species.]

30. Stipules *present*, >1 mm. long; peduncles and flowers *turning black* upon drying (spreading shrub to 8 ft. high; phyllodes 2.5-7 cm. long and 3-10 mm. wide, linear to narrow-linear; flowering Sept.-Oct.):

*A. microcarpa* F. Muell. *Fragm. Phyt. Aust.* 1: 6 (1858).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 4: [t. 8] (1887); Rogers, *Field Guide Vict. Wattles* 39 (1968).

*Vern.*: Manna Wattle. *Distr.*: ABCFGHL—also S.A., N.S.W.

- Stipules <1 mm. long *or absent*; peduncles and flowers *very rarely* turning black upon drying 31



31. Phyllodes >18 times as long as wide, always uncinatc, 1-3 mm. wide (shrub or tree 6-30 ft., phyllodes 2-8 cm. long and 1-5 mm. wide, usually very narrow; flowering Aug.-Oct. and sometimes during other months):

*A. calamifolia* Sweet ex Lindl. in *Edwards' Bot. Reg.* 10: t. 839, col. (1824).

*Illust.*: Hart in Lindley (*l.c.*); Rogers, *Field Guide Vict. Wattles* 40 (1968); Baglin & Mullins, *Aust. Wattles* 6, col. (1968).

*Vern.*: Wallowa. *Distr.*: BCDGHJ—also S.A., N.S.W.

[A population of individuals from near Wychitella differs from the typical in a number of significant ways. Often they form substantial trees up to 30 ft. high with trunks up to 9" diam., and have phyllodes up to 5 mm. wide and broadest well above their centres. The funicle almost encircles the seed and folds back on itself three times (a character that is rare in *Acacia*); it is 12-15 mm. long when straightened out.

Very strong evidence is available to show that this species hybridizes with *A. brachybotrya* Benth. and that the progeny has received the name *A. ×grayana* J. H. Willis (*q.v.*).]

—Phyllodes <15 times as long as wide, sometimes ± uncinatc, 2-7 mm. wide 32

32. Phyllodes *obtus*, very rarely with a minute point, *never* uncinatc, usually *notched at the apex*:

*A. microcarpa* F. Muell. [See p. 219.]

—Phyllodes *acute*, ± *uncinatc*, *never* notched at the apex 33

33. Phyllodes broadest well above the centre, curving most towards the apex, sometimes appearing farinaceous, grey or dark green; glands averaging 5 mm. from base of the phyllodes; base of calyx usually *tinged with carmine*; pods 4.5-7 cm. long and 3-4 mm. wide; usually pale greenish-brown, ± linear, hardly constricted between the seeds; funicle *almost encircling the seeds and folded back on itself three times*, about 12 mm. long:

*A. calamifolia* Sweet ex Lindl. [See above.]

—Phyllodes ± straight, or, if curved, then curved for most of their length, never appearing farinaceous, usually yellowish-grey but occasionally grey or dark green; glands usually > 5 mm. from the base of the phyllodes; base of calyx *yellow*; pods 3-5 cm. long and 6-8 mm. wide, usually dark reddish-brown, linear, ± constricted between the seeds; funicle *folded twice on one side of the seed* and *never* encircling it, about 4 mm. long (flowering Aug.-Oct.; endemic to far western Victoria):

*A. ×grayana* J. H. Willis in *Vict. Nat.* 73: 155 (1957).

*Vern.*: Wattle. *Distr.*: C.

[Populations of individuals that have been referred to *A. ×grayana* possess numerous features that lie almost halfway between *A. brachybotrya* Benth. and *A. calamifolia* Sweet ex Lindl., the supposed parents, and at one station close to Kiata (between Dimboola and Nhill) many hundreds of plants showing every con-

ceivable variation linking these two species have been observed. Isolated specimens of *A. ×grayana* have been recorded from sandy tracts in the Woraigworm Parish south of Kiata near the Little Desert and also between Dimboola and Natimuk.]

34. Stipules <1.5 mm. long or obscure 36  
Stipules >1.5 mm. long but sometimes breaking or falling easily from  
the lower part of the branch 35

35. Phyllodes ± *linear, lanceolate* or occasionally *oblanceolate*, 2.7-5 cm.  
long and 3-10 mm. wide, between 3 and 10 times as long as wide,  
*glabrous* or with *fine scattered hairs*:

*A. microcarpa* F. Muell. [See p. 219.]

—Phyllodes *elliptical*, 1.5-3 cm. long and 6-15 mm. wide, between 2 and 3 times as long as wide, covered with rather *short*, somewhat *twisted hairs* (spreading shrub to 10 ft. high; flowering Oct.-Nov.; very rare in Victoria where confined to Brumby Point on the Nunniong Plateau and to an isolated region of the eastern escarpment of the same plateau; pods are broadish and shaggy with ferruginous hairs):

*A. lucasii* Blakely in *J. roy. Soc. N.S.W.* 62: 215, t. 20 (1928).

*Illust.*: Blakely (*l.c.*).

*Vern.*: Wattle. *Distr.*: W—also N.S.W.

36. Phyllodes always tapering to *fine* rather *straight sharp points*; penultimate branchlets bearing *prominent lenticels* or bark breaking into ± *rectangular flakes*:

*A. siculiformis* A. Cunn. ex Benth. [See p. 217.]

—Phyllodes obtuse, or sometimes acute or mucronate, *never* tapering into fine sharp points; penultimate branches *never* bearing prominent lenticels *nor* breaking into flakes 37

37. Phyllodes glabrous, distinctly *punctate*:

*A. leprosa* Sieber ex DC. [See p. 218.]

—Phyllodes glabrous or hairy but *never* punctate 38

38. Phyllodes 0.5-1.3 cm. long, glabrous, ± *elliptical* with their lower edges much longer than their upper, sometimes viscid when young, often shining; lower edges of phyllodes *undulate*, rarely otherwise; pods covered with *short, rigid hairs* (spreading shrub to 4 ft. high; phyllodes 3-6 mm. wide and ± *ovate*; flowering July-Oct.; endemic in Victoria and confined to the Dimboola-Nhill district):

*A. glandulicarpa* F. M. Reader in *Vict. Nat.* 13: 146 (1897).

*Illust.*: Galbraith, *Vict. Nat.* 79: 166 (1962); Rogers, *Field Guide Vict. Wattles* 76 (1968).

*Vern.*: Hairy-pod Wattle. *Distr.*: C.

- Phyllodes >1.3 cm. long or, if less, then either hairy or with a mucronate apex; phyllodes terminated by short, oblique points or notched, *never* undulate, viscid, *nor* shining; lower edges of phyllodes *never* significantly longer than the upper; pods *glabrous* 39
39. Phyllodes both hairy and >1.2 cm. long, or, if glabrous, then with distinct lateral nerves, *never* orbicular but usually *elliptical*, *ovate* or *obovate*; pods >5 mm. wide,  $\pm$  straight 41
- Phyllodes glabrous and without consistently distinct lateral nerves, or, if hairy, then <1.2 cm. long, often *orbicular*; pods <4 mm. wide,  $\pm$  *coiled* or *twisted* 40
40. Phyllodes <2.5 cm. long, between 1 and 5 times as long as wide, often *orbicular* (shrub to 4 ft. high, rarely more; phyllodes 0.4-2.5 cm. long and 2-12 mm. wide; flowering Aug.-Nov.):

*A. acinacea* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 265 (1838).

*A. obliqua* A. Cunn. ex Benth. in Hook.

*Lond. J. Bot.* 1: 334 (1842), *non* Desv. (1814).

*A. rotundifolia* Hook. f. in Curtis's *Bot. Mag.* 69: t. 4041, *col.* (1843).

*Illust.*: Galbraith, *Vict. Nat.* 76: 236 (1960); Rogers, *Field Guide Vict. Wattles* 32 (1968); Rogers, *l.c.* 33, as *A. rotundifolia*; Hooker (*l.c.*).

*Vern.*: Gold-dust Wattle. *Distr.*: BCDGHJMNPR—S.A., N.S.W.

[Specimens with  $\pm$  orbicular phyllodes, hairy branchlets and phyllodes, have been listed as a distinct species (*A. rotundifolia*) by most authorities, but they are regarded here as belonging to *A. acinacea*, a species which shows considerable variation in size and shape of phyllodes as well as degree of pubescence. This population has been recorded from the Bendigo district, Mt. Ida near Heathcote, Peechelba, Warby Ra., Indigo and Chiltern.]

—Phyllodes >2.5 cm. long, between 4-12 times long as wide, *never* orbicular:

*A. microcarpa* F. Muell. [See p. 219.]

41. Mature phyllodes always hairy, completely clothed in short  $\pm$  *appressed silky hairs*; youngest foliage golden-pubescent; upper stems pubescent; bark *very tough when fresh* (tree or shrub to 8 ft. high and 12 ft. across; phyllodes 2.4-5 cm. long and 9-15 mm. wide, oblanceolate or obovate; flowering Sept.-Nov.; known in Victoria from only a single collection gathered between Murtoa and Coromby in October 1892 and now presumed extinct):

*A. argyrophylla* Hook. in Curtis's *Bot. Mag.* 74: t. 4384, *col.* (1848).

*Illust.*: Fitch in Hook. (*l.c.*).

*Vern.*: Silver Mulga. *Distr.*: CH—also S.A.

—Mature phyllodes glabrous or hairy, but *never* completely clothed with silky hairs, youngest foliage very rarely tinged with gold but  $\pm$  æruginous or grey-white; bark *never* significantly tough when fresh (shrub or small tree, to 15 ft. high and 20 ft. across; phyllodes 0.9-3.5 cm. long and 4-16 mm. wide, usually oblanceolate or obovate but sometimes ovate; flowering July-Oct.):

*A. brachybotrya* Benth. in Hook. *Lond. J. Bot.* 1: 347 (1842).

*Illust.*: Galbraith, *Vict. Nat.* 80: 321 (1964); Rogers, *Field Guide Vict. Wattles* 36 (1968).

*Vern.*: Grey Mulga. *Distr.*: ABCFGHLM—also S.A., N.S.W., Qd.

[A putative hybrid between this species and *A. calamifolia* is discussed under *A. ×grayana* J. H. Willis (q.v.).]

42. Phyllodes always <1.5 times as long as wide and <1.5 cm. long, ± broadly triangular (shrub or tree up to 25 ft. high; phyllodes 0.5-1.8 cm. long and 4-14 mm. wide; flowering Sept.-Oct.):

*A. pravissima* F. Muell. *Fragm. Phyt. Aust.* 1: 5 (1858).

*Illust.*: Galbraith, *Vict. Nat.* 78: 136 (1961); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 3 (1967); Rogers, *Field Guide Vict. Wattles* 83 (1968).

*Vern.*: Ovens Wattle (Wedge-leaf Wattle). *Distr.*: RSV—also N.S.W., A.C.T.

—Phyllodes always >twice as long as wide and >1.2 cm. long, *never* broadly triangular 43

43. Phyllodes covered with short *twisted hairs*, about 1.5-3 cm. long and 6-15 mm. wide, 2-3 times as long as wide, ± elliptical, acute but *never* with a mucronate point; margins and mid-nerves conspicuously yellow or yellowish-orange; stipules *present*, >1.5 mm. long, sometimes falling away or breaking easily:

*A. lucasii* Blakely. [See p. 221.]

—Phyllodes covered with very short *straight appressed silver hairs*, about 1.5-4 cm. long and 5-13 mm. wide, usually 3-4 times as long as wide, obovate to oblanceolate, obtuse with a *minute mucronate point*; margins and mid-nerves *never* conspicuously yellow; stipules *obscure or none*:

*A. argyrophylla* Hook. [See p. 222.]

—Phyllodes *quite glabrous* or, if *sparsely hairy*, then >3 times as long as wide, *never* densely silver hairy and oblanceolate, *without* conspicuous yellow margins and mid-nerves; stipules usually absent 44

44. Upper branches *streaked with brownish resinous ridges and usually greyish-white stripes* consisting of ± matted and very minute appressed hairs; phyllodes 7-20 times as long as wide, 3.5-12 cm. long and 3-9 mm. wide, with fine secondary nerves mostly ± parallel to the primary nerves; edges of phyllodes ± *resinous* and appearing ± *asperous*; flowers always <10 on hoary or ± rough, *never* glabrous, peduncles 1-3 mm. long and viscid in bud (shrub to 8 ft. high; flowering Aug.-Oct.; very rare in Victoria where known only from a few isolated occurrences on rocky hillsides near Mitta Mitta):

*A. dawsonii* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 22: 153, t. 8 (1897).

*Illust.*: Baker (l.c.); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 5 (1967); Rogers, *Field Guide Vict. Wattles* 90 (1968).

*Vern.*: Poverty Wattle (Mitta Wattle). *Distr.*: V—also N.S.W., A.C.T.

—Upper branches, phyllodes, flowers and peduncles *never* combining all the above characters 45

45. Phyllodes with a strong  $\pm$  *central primary nerve* and a *weaker secondary nerve* running for most of the length of the phyllode and near the upper margin, oblanceolate, linear or ligulate, obtuse and  $\pm$  penninerved; ultimate stems triquetrous or sometimes almost flat; flower-heads <6 mm. diam. at anthesis; flowers about 20-35 per head; peduncles 3-8 mm. long, glabrous (shrub or tree 3-20 ft. high; phyllodes 8-16 cm. long and 3-30 mm. wide; flowering June-Sept. and sometimes Jan.):

*A. difformis* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 22: 154 t. 9 (1897).

*Illust.*: Baker (*l.c.*).

*Vern.*: Wattle. *Distr.*: HMR—also N.S.W.

[Two specimens gathered near Dimboola towards the end of last century seem referable to this species but their phyllodes are longer and narrower. The fact that this material was collected in flower during January also supports this conclusion.]

—Phyllodes *without* a secondary nerve running for most of the length of the phyllode 46

46. Phyllodes usually between 3 and 9 times as long as wide, >4 cm. long and >10 mm. wide, often  $\pm$  glaucous, oblanceolate, or obovate,  $\pm$  obtuse,  $\pm$  falcate and bent downwards near the base,  $\pm$  thick; primary nerve always much closer to the upper margin of the phyllode; flowers usually >20 per head, bright yellow (shrub or tree 3-50 ft. high; phyllodes up to 17 cm. long and 5 cm. wide; flowering Aug.-Nov.):

*A. obliquinervia* M. D. Tindale in *Contr. N.S.W. Nat. Herb.* 4: 76 (1968).

*A. falciformis* sens. H. B. Williamson in Ewart *Flor. Vict.* 586 (1931) atque auctt. nonn., *non* DC. (1825);

*A. penninervis* Sieber ex DC. var. *falciformis* auctt. nonn., *non* (DC.) Benth.

*Illust.*: Ewart, *Handb. For. Trees* t. 65 fig. B (1925), as *A. penninervis*; Rogers, *Field Guide Vict. Wattles* 62 (1968).

*Vern.*: Mountain Hickory Wattle. *Distr.*: DJNRSVWZ—also N.S.W., A.C.T.

[A highly glaucous population with somewhat shorter and wider phyllodes is known from the Buchan district and may be referable to this species, but its precise status is not known yet. It grows into a spectacular  $\pm$  pyramidal tree about 30 ft. high and thrives in limestone soils.]

—Phyllodes, primary nerves and flowers *never* all combining the above characters 47

47. Flowers 10-30 per head; peduncles glabrous, 2-4 mm. long; unexpanded racemes subtended by large conspicuous, imbricate bracts; upper part of ultimate branchlets angular, completely glabrous, from pale to dark reddish-brown; phyllodes 3-5-10 cm. long and 3-12 mm. wide, smooth and never conspicuously wrinkled when dry, usually broadest

near or below the centre and never significantly so above, neither uncinatate nor tapering into a fine straight or curved point but terminated by a small straight or oblique mucronate point; margin of phyllodes never conspicuous; pods 3-11 cm. long and 7-13 mm. wide, flat, hardly constricted between the seeds,  $\pm$  purplish (tree to 30 ft. high; flowering Sept.-Nov.; N.E. highlands):

*A. kettlewellia* Maiden in *J. roy. Soc. N.S.W.* 49: 484 (1916).

*A. oreophila* Maiden et Blakely in *l.c.* 60: 185 t. 15 fig. 1-6 (1927);

*A. Walteri* Maiden et Blakely in *l.c.* 60: 184 t. 15 fig. 7-11 (1927).

*Illust.*: Flockton in Maiden & Blakely (*l.c.*); Rogers, *Field Guide Vict. Wattles* 59 (1968).

*Vern.*: Buffalo Wattle. *Distr.*: RVW—also N.S.W.

—Flowers, peduncles, unexpanded racemes, upper parts of ultimate branchlets, phyllodes, margins of phyllodes, and pods clearly never combining all the above characters at once 48

48. Phyllodes >8 times as long as wide 57  
Phyllodes <8 times as long as wide 49

49. Flowers <20 per head, or, if more, then either phyllodes <6 cm. long or most of ultimate stems sharply angled; phyllodes obtuse or acute; primary nerves and sometimes the surfaces of phyllodes distinctly tinged with red 51

Flowers >20 per head; phyllodes >5 cm. long; most parts of ultimate branches  $\pm$  terete or soon becoming  $\pm$  terete, neither sharply angled nor winged; phyllodes obtuse, very rarely otherwise; neither primary nerves nor surfaces of phyllodes distinctly tinged with red 50

50. Phyllodes broadest at or below the centre; surfaces of phyllodes often becoming  $\pm$  mottled with pinkish-purple upon drying; flowers 20-35 per head creamy yellow; peduncles usually minutely pubescent; pods 8-13 cm. long and 16-22 mm. wide; valves of pods thick (usually an erect tree to 30 ft. high or more; phyllodes 10-22 cm. long and 25-30 mm. wide, often narrow-linear or  $\pm$  falcate, the gland joined to midrib by a prominent secondary vein; flowering Nov.-Dec.; E. Gippsland):

*A. falciformis* DC. *Prodr.* 2: 452 (1825).

*Illust.*: Maiden, *For. Flor. N.S.W.* 3: t. 92 fig. A-E (1907); Ewart, *Handb. For. Trees* t. 65 fig. A (1925); as *A. penninervis*.

*Vern.*: Hickory Wattle. *Distr.*: WZ—also Qd, N.S.W.

—Phyllodes clearly broadest above the centre, very rarely otherwise; surface of phyllodes never becoming mottled with pinkish-purple upon drying; flowers usually >40 per head; peduncles glabrous; pods 5-14 cm. long and 5-7 mm. wide; valves of pod thin (erect or spreading tree 6-30 ft. high; phyllodes 5.5-19 cm. long and 4-52 mm. wide, oblanceolate to narrow-linear and sometimes falcate; flowering Aug.-Oct.):

*A. pycnantha* Benth. in Hook. *Lond. J. Bot.* 1: 351 (1842).

*Illust.*: Galbraith, *Vict. Nat.* 76: 40 (1959); Rogers, *Field Guide Vict. Wattles* 52 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 308, col. (1968); Baglin & Mullins, *Aust. Wattles* 19, col. (1968).

*Vern.*: Golden Wattle. *Distr.*: BCDEHJMNPRSVWZ—also S.A., N.S.W., A.C.T.

51. Flowers >16 per head 55  
Flowers <16 per head 52

52. Flowers <6 per head; flower-heads >4 mm. diam., peduncles glabrous; phyllodes >5 mm. wide with prominent yellow or greenish-yellow margins and a *single conspicuous gland* (usually an erect shrub to 8 ft. high; phyllodes 2-8 cm. long and 7-25 mm. wide,  $\pm$  elliptical or oblanceolate; flowering July-Dec.):

*A. myrtifolia* (Sm.) Willd. *Spec. Plant.* 4: 1054 (1806).

*Mimosa myrtifolia* Sm. in *Trans. Linn. Soc. Lond.* 1: 252 (1791).

*Illust.*: Ewart, *Handb. For. Trees* t. 73 (1925); Curtis, *Student's Flor. Tasm.* 1: 120 fig. 36 A & B (1956); Galbraith, *Vict. Nat.* 76: 102 (1959); Rogers, *Field Guide Vict. Wattles* 51 (1968); Rosser, *Wildflowers Vict.* 105, col. (1968); Baglin & Mullins, *Aust. Wattles* 9, col. (1968).

*Vern.*: Myrtle Wattle. *Distr.*: CDEJKNPSTWZ—also W.A., S.A., Qd, N.S.W., Tas.

—Flowers >5 per head; flower-heads <4 mm. diam.; peduncles glabrous; phyllodes >5 mm. wide, with prominent yellow or greenish-yellow margins and 2 or 3 *conspicuous glands* (shrub up to 5 ft. high; phyllodes 2.5-5 cm. long and up to 12 mm. wide; flowering Aug.-Sept.; E. highlands):

*A. amœna* H. Wendl. *Comment. Acac.* 16 t. 4 (1820).

*Illust.*: Wendland (*l.c.*); Galbraith, *Vict. Nat.* 78: 240 (1961); Rogers, *Field Guide Vict. Wattles* 63 (1968); Baglin & Mullins, *Aust. Wattles* 12, col. (1968).

*Vern.*: Boomerang Wattle. *Distr.*: VW—also Qd, N.S.W.

—Flowers >5 per head, or, if fewer, then phyllodes <5 mm. wide; flower-heads sometimes <4 mm. diam.; peduncles glabrous or hairy; phyllodes usually without prominent yellowish or greenish-yellow margins and usually with only 1 *gland or none* 53

53. Phyllodes <3 cm. long; peduncles glabrous (usually a straggly shrub to 6 ft. high; phyllodes 1.3-3 cm. long and 3-11 mm. wide, usually  $\pm$  elliptical; flowering Sept.-Dec.):

*A. buxifolia* A. Cunn. in *Field Geogr. Mem. N.S.W.* 344 (1825).

*Illust.*: Galbraith, *Vict. Nat.* 78: 114 (1961); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 6 (1967); Rogers, *Field Guide Vict. Wattles* 50 (1968).

*Vern.*: Box-leaf Wattle. *Distr.*: JUVWZ—also Qd, N.S.W., A.C.T.

—Phyllodes >3 cm. long, or, if less, then *peduncles pubescent* 54

54. Ultimate stems *finely pubescent*,  $\pm$  grey, usually  $\pm$  terete, rarely sharply angled; peduncles distinctly *pubescent*; phyllodes 1.5-6 cm. long,

lanceolate to linear, usually straight, usually broadest *near or below the centre*, often  $\pm$  abruptly narrowed towards the base, often glaucous, *never* tinged with red when dry, mucronate or sometimes slightly uncinatate (usually a dense spreading shrub 6-8 ft. high; phyllodes 3-9 mm. wide; flowering Sept.-Nov.; E. highlands):

**A. kybeanensis** Maiden et Blakely in *J. roy. Soc. N.S.W.* 60: 188 t. 17 fig. 1-6 (1927).

*Illust.*: Flockton in Maiden & Blakely (*l.c.*); Galbraith *Vict. Nat.* 77: 319 (1961); Rogers, *Field Guide Vict. Wattles* 60 (1968).

*Vern.*: Kybean Wattle. *Distr.*: VW—also N.S.W.

—Ultimate stems *glabrous*, usually reddish-brown, usually sharply angled; peduncles *glabrous*; phyllodes  $>3.5$  cm. long, linear to  $\pm$  ligulate,  $\pm$  straight or gently curved, never falcate, broadest *above the centre* and tapering gradually into the base but narrowing abruptly towards the apex, often glaucous, *never* significantly tinged with red when dry, usually uncinatate (shrub or tree 6-15 ft. high; phyllodes up 17 cm. long and 3-15 mm. wide; usually flowering Oct.-Jan.):

**A. retinodes** Schlechtendal in *Linnæa* 20: 664 (1847).

*Illust.*: Stapf & Ballard, *Curtis's bot. Mag.* 153: t. 9177, col. (1929); Galbraith, *Vict. Nat.* 77: 73 (1960); Rogers, *Field Guide Vict. Wattles* 52 (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 472 (1971).

*Vern.*: Wirilda. *Distr.*: CDEHJMNPT—also S.A., Tas.

[Coastal populations recorded from both the Bellarine and Mornington Peninsulas and from Wilson Prom. with uncinatate and shorter phyllodes ( $<7$  cm. long) represent *A. retinodes* var. *uncifolia* J. M. Black in *Trans. roy. Soc. S. Aust.* 56: 42 (1932) originally described from material collected near Victor Harbour in South Australia.]

—Ultimate stems *glabrous*, usually reddish-brown, usually sharply angled; peduncles *glabrous*, rarely pubescent; phyllodes  $>4$  cm. long, occasionally narrow-linear, usually  $\pm$  falcate, broadest *at or near the centre*, very rarely above, and nearly always tapering gradually towards the base and apex, sometimes glaucous, both surfaces and margins usually *becoming tinged with red upon drying*, rarely uncinatate or mucronate (erect tree 10-40 ft. high or more; phyllodes 5.5-15 cm. long and 10-23 mm. wide; flowering July-Oct.):

**A. rubida** A. Cunn. in *Field Geogr. Mem. N.S.W.* 344 (1825).

*Illust.*: Galbraith, *Vict. Nat.* 78: 38 (1961); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 9 (1967); Rogers, *Field Guide Vict. Wattles* 54 (1968).

*Vern.*: Red-stem Wattle. *Distr.*: RSVWZ—S.A., Qd, N.S.W.; A.C.T.

55. Peduncles  $>10$  mm. long, sometimes *twinned*; phyllodes about 2-5 cm. long and 3-8 mm. wide (spreading shrub or tree 10-30 ft. high; phyllodes elliptical, linear or narrow-linear; flowers creamy yellow, appearing Sept.; rare and localized in Victoria where confined to Mildura and Red Cliffs along the Murray River):



*A. victoriæ* Benth. in Mitch. *J. Exped. trop. Aust.* 333 (1848).

*Illustr.*: Mueller, *Icon. Aust. Acac.* Dec. 4: [t. 9] (1887), as *A. Sentis*; Ewart, *Handb. For. Trees* t. 64 (1925), as *A. sentis*; Rogers, *Field Guide Vict. Wattles* 65 (1968).

*Vern.*: Bramble Wattle (Gundabluey—Qd). *Distr.*: A—also W.A., N. Terr., S.A., Qd, N.S.W.

—Peduncles 3-5 mm. long, *never* twinned; phyllodes 1.5-3 cm. long and 4-8 mm. wide (spreading shrub about 6-8 ft. high and sometimes 10 ft. across; phyllodes oblanceolate or narrow-linear; flowers bright yellow, appearing Aug.-Sept.; very rare in Victoria and confined to the Warby Range near Thoona):

*A. decora* Reichenb. *Icon. Bot. Exot.* 2: 35 t. 199 (1828?).

*Illustr.*: Reichenbach (*l.c.*).

*Vern.*: Western Silver Wattle. *Distr.*: R—also Qd, N.S.W.

—Peduncles <10 mm. long, *never* twinned; phyllodes >3.5 cm. long and 3-28 mm. wide. 56

56. Ultimate stems usually reddish-brown; phyllodes 7-8 times as long as wide, linear to  $\pm$  ligulate,  $\pm$  straight or gently curved, *never* falcate, broadest above the centre and tapering gradually into the base but narrowing  $\pm$  abruptly towards the apex, often  $\pm$  glaucous, *never* significantly tinged with red when dry, usually *uncinate*; pod 3-11 cm. long and 6-8 mm. wide:

*A. retinodes* Schlechtendal. [*See* p. 227.]

Ultimate stems usually reddish-brown; peduncles usually glabrous, rarely pubescent; phyllodes 3-8 times as long as wide, sometimes  $\pm$  linear, usually  $\pm$  falcate, broadest at or near the centre, very rarely above, usually tapering gradually towards both base and apex, sometimes slightly glaucous, both surfaces and margins usually becoming *tinged with red upon drying*, rarely *uncinate* or *mucronate*; pod 6-13 cm. long and 7-9 mm. wide:

*A. rubida* A. Cunn. [*See* p. 227.]

Ultimate stems tinged with reddish- or pale brown; peduncles glabrous; phyllodes either 3-5 times as long as wide and then broadest above the centre or 6-8 times long as wide and broadest at or above the centre, straight or slightly falcate, tapering gradually towards the base but more abruptly towards the apex, sometimes  $\pm$  glaucous, *never* becoming tinged with red on drying, *never* *uncinate* nor *mucronate*; pod 5-13 cm. long and 11-15 mm. wide (shrub or tree to about 8 ft. high; phyllodes up to 11 cm. long obovate, oblanceolate or narrow-linear; flowering Nov.-Feb.; confined to rocky declivities along the Hume Highway between Avenel and Longwood, on the slopes of Mt. Bernard east of Avenel and near Pranyip):

*A. penninervis* Sieber ex DC. *Prodr.* 2: 452 (1925).

*Illustr.*: Hooker, *Curtis's bot. Mag.* 54: t. 2754, col. (1827); Rogers, *Field Guide Vict. Wattles* 61 (1968).

*Vern.*: Hickory Wattle. *Distr.*: M—also Qd, N.S.W.

57. Flowers >10 per head; racemes *never* enclosed by large imbricate bracts; phyllodes often >8 mm. wide, straight, curved or sometimes falcate

59

Flowers <11 per head; racemes sometimes enclosed by *large imbricate bracts*; phyllodes <8 mm. wide, straight or gently curved but never falcate

58

58. Phyllodes 1.5-9 cm. long and <4 mm. wide; ultimate stems usually 1-2 mm. diam.,  $\pm$  angled or sometimes *terete*; racemes *never* enclosed in large imbricate bracts (shrub to 8 ft. high; phyllodes narrow; flowering Sept.-Oct.; upper Snowy R. and tributaries):

*A. boormanii* Maiden in *J. roy. Soc. N.S.W.* 49: 489 (1916).

*A. linearis* sens. H. B. Williamson in *Ewart Flor. Vict.* 594 (1931), non (J. Wendl.) Macbride (1919) *nec* Sims (1820);

*A. hunteriana* N. A. Wakefield in *Vict. Nat.* 72: 92 (1955).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 55 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 463, col. (1968); Baglin & Mullins, *Aust. Wattles* 10, col. (1968); Stones in *Curtis's bot. Mag. new ser.* t. 569, col. (1970).

*Vern.*: Snowy River Wattle. *Distr.*: VW—also N.S.W.

—Phyllodes 5-15 cm. long and >5 mm. wide; ultimate stems >2 mm. across, always *distinctly triquetrous* or sometimes appearing  $\pm$  flattened; racemes enclosed by *large imbricate bracts* when young (usually a straggly shrub 6-8 ft. high; phyllodes up to 8 mm. wide; flowering April-Oct.):

*A. suaveolens* (Sm.) Willd. *Spec. Plant.* 4: 1050 (1806).

*Mimosa suaveolens* Sm. in *Trans. Linn. Soc. Lond.* 1: 253 (1791).

*Illust.*: Galbraith, *Vict. Nat.* 77: 131 (1960); Rogers, *Field Guide Vict. Wattles* 58 (1968); Scarth-Johnson, *Wildflowers N.S.W.* 47, col. (1968); Baglin & Mullins, *Aust. Wattles* 17, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 476 (1971).

*Vern.*: Sweet Wattle. *Distr.*: DEJNPTWXZ—S.A., Qd, N.S.W., Tas.

59. Phyllodes >10 times as long as wide, 9-20 cm. long, 4-20 mm. wide, tapering gradually towards both the base and apex; flowers >35 per head; flower-heads >7 mm. diam. (small shrub or spreading tree up to 30 ft. high often producing numerous suckers; flowering Oct.-Nov.; introduced from W. Aust. and now firmly established in several parts of Victoria):

\**A. saligna* (Labill.) H. Wendl. *Comment. Acac.* 26 (1820).

*Mimosa saligna* Labill. *Nov. Holl. Plant. Specim.* 2: 86 t. 235 (1806).

*Illust.*: Labillardière (*l.c.*); Herbert, *J. roy. Soc. W. Aust.* 6: 74 fig. A (1920); Rogers, *Field Guide Vict. Wattles* 67 (1968).  
*Vern.*: Golden Wreath Wattle. *Distr.*: ACGNS.

—Phyllodes, flowers and flower-heads never combining all the above characters 60

60. Calyx distinctly *lobed* or *divided* into  $\pm$  spatulate sepals; lobes or sepals usually distinctly ciliate, at least along the upper margin; phyllodes 3-25 cm. long and 1.5-50 mm. wide, occasionally ligulate, broadest below, at, or above their centres, sometimes falcate, sometimes drying with a pinkish or purplish-red tinge; peduncles glabrous or pubescent 62

—Calyx *truncate* or almost so, *not* divided into distinct sepals, glabrous except for a few minute cilia along the upper margin; phyllodes 3-12 cm. long and 3-15 mm. wide, or, if only 2 mm. wide, then clearly wrinkled, ligulate or clearly broadest above the centre, never falcate but sometimes slightly curved, never drying with a pinkish or purplish-red tinge; peduncles glabrous 61

61. Foliage usually *erect* or *spreading*; phyllodes 3-9 cm. long, mucronate or with a small, hard, oblique point or occasionally uncinatate, often ligulate, *never* flaccid; pods 3-10 cm. long and 5-10 mm. wide, sometimes glaucous, constricted between the seeds, breaking *easily* into 1-seeded segments; valves of pod sometimes  $\pm$  woody (shrub or small tree to 15 ft. high and to 20 ft. across; flowering Aug.-Nov.; Mallee):

**A. ligulata** A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 362 (1842).

*Illust.*: Ewart, *Handb. For. Trees* t. 69 (1925), as *A. salicina*; Rogers, *Field Guide Vict. Wattles* 57 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 182, col. (1968); Baglin & Mullins, *Aust. Wattles* 20, col. (1968).  
*Vern.*: Small Cooba. *Distr.*: ABCFG—W.A., Cent. Aust., S.A., ?Qd, N.S.W.

—Foliage usually *pendulous*; phyllodes usually 5-12 cm. long, never ending in a small hard point, rarely ligulate, always  $\pm$  *flaccid*; pods 4-12 cm. long and 7-10 mm. wide, rarely glaucous, hardly constricted between the seeds, *not* breaking easily into 1-seeded segments; valves of pod woody (tree to 20 ft. high with pendulous branches; usually flowering March-June):

**A. salicina** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 20 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2 2: fig. 570 (1928); Rogers, *Field Guide Vict. Wattles* 64 (1968).  
*Vern.*: Willow Wattle. *Distr.*: ABCFGHLM—W.A., Cent. Aust., S.A., Qd, N.S.W.

62. Phyllodes 1-12 mm. wide, straight or sometimes gently curved but never falcate, *broadest above the centre*, tapering gradually toward the base, terminated  $\pm$  *abruptly at the apex*, obtuse or occasionally  $\pm$  acute, never uncinatate, usually appearing conspicuously wrinkled, never drying with a pinkish-purple or reddish tinge; peduncles always

glabrous; pods 3-7 mm. wide, distinctly constricted between the seeds if only 3-4 mm. wide but hardly constricted between the seeds when >5 mm. wide (shrub or small tree 3-12 ft. high; phyllodes 3-15 cm. long; flowering June-Sept.):

**A. hakeoides** A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 354 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 5: [t. 10] (1887); Rogers, *Field Guide Vict. Wattles* 56 (1968).

*Vern.*: Hakea Wattle. *Distr.*: ABCDGHJM—also W.A., S.A., Qd, N.S.W.

[Two distinct populations at present referable to *A. hakeoides* are known from the Bendigo district. One of these, characterized by its small narrow phyllodes (<3 mm. wide), small, distinctly moniliform pods (<4 mm. wide), and small flower-heads (<30 flowers), has been recorded from the Whipstick. It was first named *A. ligulata* A. Cunn. ex Benth. var. *angustifolia* H. B. Williamson in A. J. Ewart, *Flor. Vict.* 594 (1931) and subsequently transferred to *A. hakeoides* as var. *angustifolia* J. H. Willis in *Vict. Nat.* 73: 156 (1957). It has been illustrated under this name by Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 314, col. (1968), is well known from the Whipstick area north of Bendigo and has been called Whirrakee Wattle. The second population recorded from only the Moon Mines region beyond Eaglehawk differs from typical *A. hakeoides* in its much longer phyllodes (to 15 cm.) and larger flower-heads (up to 40 flowers). Both populations might represent new species.]

—Phyllodes, peduncles and pods *never* combining all the above characters

63

63. Flowers >20 per head and most parts of ultimate stems  $\pm$  *terete* or soon becoming *terete*, neither sharply angled nor winged; phyllodes <10 times as long as wide, very rarely tapering gradually towards the apex, obtuse, very rarely acute; neither surface of phyllodes nor primary nerves distinctly tinged with red but sometimes the former tinged with pinkish-purple on drying; pods 5-7 or 16-22 mm. wide

65

Flowers <20 per head, or, if more, then parts of ultimate stems *sharply angled* or sometimes *winged*; phyllodes often >10 times as long as wide, often tapering gradually towards the apex and often acute or  $\pm$  acuminate but, if the latter, then the points neither rigid nor sharp; surface of phyllodes and primary nerves sometimes tinged with red; pods 6-9 mm. wide

64

64. Phyllodes linear to  $\pm$  ligulate, sometimes <6 mm. wide,  $\pm$  *straight* or *gently curved*, never falcate, often broadest above the centre and usually narrowing  $\pm$  abruptly towards the apex, *never* significantly tinged with red when dry:

**A. retinodes** Schlechtendal. [See p. 227.]

—Phyllodes rarely linear, never ligulate, always >6 mm. wide and usually >10 mm. wide, usually  $\pm$  falcate, broadest at or near the centre, very rarely above, nearly always tapering gradually towards the apex; surface, primary nerves and margins usually *tinged with red when dry*:

**A. rubida** A. Cunn. [See p. 227.]

65. Phyllodes broadest *at or below the centre*; surface of phyllodes often becoming partly mottled with pinkish-purple on drying; flowers

20-35 per head; peduncles usually *minutely pubescent*; pods 16-22 mm. wide; valves of pod *thick*:

*A. falciformis* DC. [See p. 225.]

—Phyllodes clearly broadest *above the centre*, very rarely otherwise; surface of phyllodes never becoming mottled with pinkish-purple on drying; flowers usually >40 per head; peduncles glabrous; pods 5-7 mm. wide; valves of pod relatively *thin*:

*A. pycnantha* Benth. [See p. 226.]

66. Flowers in *cylindrical spikes*, sometimes distant from one another 89  
Flowers in compact *globular heads* 67

67. Phyllodes always <1.5 times as long as wide and <1.5 cm. long,  $\pm$  *broadly triangular*:

*A. pravissima* F. Muell. [See p. 223.]

—Phyllodes always >twice as long as wide and >0.8 cm. long, *never truly broadly triangular* 68

68. Phyllodes with numerous minute  $\pm$  parallel nerves but sometimes with several of these more prominent than the rest; phyllodes 1.2-10 cm. long and 2-13 mm. wide, never wrinkled, viscid nor punctate; anastomosing nerves entirely absent or inconspicuous; nerves never raised conspicuously above the surface of the phyllodes 84

Phyllodes with <6 equally prominent primary nerves, or, if more, then either phyllodes significantly broadest well above the centre or all or almost all nerves conspicuously raised above the surface of the phyllodes; phyllodes 0.8-50 cm. or more long and 1-35 mm. wide, sometimes wrinkled, viscid or punctate; anastomosing nerves often present 69

69. Phyllodes 1.5-7 cm. long and 1-6 mm. wide, linear-cuneate or narrow-linear, usually gently curved, obtuse or almost so, thick and  $\pm$  *fleshy* when fresh but becoming wrinkled when dry, neither viscid nor punctate; nerves up to 7 to each face, becoming obscure when phyllodes dry; peduncles hoary, <4 mm. long, usually twinned but sometimes single or in three's or four's, never in racemes (intricate Mallee shrub 3-5 ft. high; flowering July-Nov.):

*A. farinosa* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 145 (1838).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 7: [t. 7] (1887); Rogers, *Field Guide Vict. Wattle* 75 (1968).

*Vern.*: Mealy Wattle. *Distr.*: BC—also S.A., N.S.W.

—Phyllodes, nerves and peduncles *never* combining all the above characters 70

70. Phyllodes >3 cm. long, *never* punctate 76

Phyllodes <3 cm. long or, if longer, then distinctly *punctate* 71

71. Phyllodes >4 cm. long 75

Phyllodes <4 cm. long 72

72. Nerves <5 to each face of the phyllodes; foliage usually *viscid* and sometimes  $\pm$  *farinaceous*; phyllodes never punctate, *narrowly*

*sigmoid*, usually terminated by a small, hard, oblique point, broadest near or above the centre, usually quite glabrous; *peduncles golden-pubescent*, <5 mm. long (Mallee shrub 3-10 feet high; phyllodes 0.5-4 mm. wide; flowering Aug.-Dec.):

**A. wilhelmiana** F. Muell. in *Trans. phil. Soc. Vict.* 1: 37 (1855).

*A. Bynoeana* sens. Benth. (1964) atque auctt. omn. subsequ., non quoad Benth. (1855).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 3: [t. 1] (1887), as *A. Bynoeana*; Black, *Flor. S. Aust.* ed. 2 2: fig. 576 (1948), as *A. Bynoeana*; Rogers, *Field Guide Vict. Wattles* 78 (1968).

*Vern.*: Dwarf Nealie. *Distr.*: ABCFG—also S.A., N.S.W.

—Nerves >4 to each face; foliage *neither* distinctly viscid *nor* farinaceous; phyllodes never punctate, straight or curved, *very rarely* narrowly sigmoid, usually terminated by a hard, straight, or oblique point, broadest well above the centre, usually quite glabrous; peduncles *glabrous*, <4 mm. long (usually a low spreading shrub 5 ft. high and up to 15 ft. across; phyllodes usually 2-4 mm. wide; flowering Aug.-early Nov.; Mallee):

**A. sclerophylla** Lindl. in *Mitch. Three Exped. E. Aust.* 2: 138 (1838).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 77 (1968).

*Vern.*: Hard-leaf Wattle. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

—Nerves <5 to each face; foliage *often* viscid or shining, *very rarely* farinaceous; phyllodes usually punctate, straight or curved but *never* narrowly sigmoid, usually obtuse but sometimes acute or occasionally acuminate, broadest above or below the centre, often pubescent; peduncles glabrous or hoary-pubescent, *never* distinctly golden-pubescent, >4 mm. long 73

73. Phyllodes ovate-lanceolate or  $\pm$  oval, acute or acuminate, rather straight, <3 cm. long, <4 times as long as wide; margin of phyllodes usually *minutely pubescent*; secondary veins  $\pm$  inconspicuous (graceful  $\pm$  erect tree to 25 ft. high or more; phyllodes 4-10 mm. wide; flowering Aug.-Oct., endemic in Victoria and restricted to the South Gippsland Ranges, principally Tarra Valley and adjacent country, also Mt. Useful):

**A. howittii** F. Muell. in *Vict. Nat.* 10: 16 (1893).

*Illust.*: Turrill, *Curtis's bot. Mag.* 171: new ser. t. 271, col. (1956); Galbraith, *Vict. Nat.* 77: 43 (1960); Rogers, *Field Guide Vict. Wattles* 72 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 410, col. (1968).

*Vern.*: Sticky Wattle. *Distr.*: ST.

—Phyllodes never combining all the above characters at once; margins of phyllodes *never* minutely pubescent; secondary veins sometimes conspicuous 74

74. Phyllodes distinctly punctate, or, if obscurely so, then phyllodes either  $\pm$  linear and falcate or >7 mm. wide (shrub or tree 6-15 ft. high;

phyllodes up to 14 cm. long and 2-30 mm. wide, from ovate or elliptical to ligulate; flowering Aug.-Jan.):

*A. verniciflua* A. Cunn. in *Field Geogr. Mem. N.S.W.* 344 (1825).

*Illust.*: Ewart, *Handb. For. Trees* t. 62 (1925); Rogers, *Field Guide Vict. Wattle* 73 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 328, col. (1968).

*Vern.*: Varnish Wattle. *Distr.*: CDEHJMNPRSTVWZ—also S.A., Qd, N.S.W., A.C.T., Tas.

[*A. verniciflua*, as understood in Victoria at present, is a highly polymorphic species represented by a number of forms which grade almost imperceptibly into one another. There seems to be some degree of correlation between these forms and their geographical distributions but all of them should be carefully examined throughout their entire range before any names are applied to them.

Clearly *A. ausfeldii*, *A. cognata*, *A. leprosa* and *A. stricta* are very closely related to *A. verniciflua* and probably all are members of the same group. Most likely *A. armata* and *A. howittii* also fall into the same category. All of these species have certain features in common and the characters of the pods are the most significant of these, suggesting that Acacias should be arranged into groups that depend to a large extent on the nature of the pods. George Bentham, who published several accounts of Australian Acacias, admitted that he was unable to find a satisfactory method of arranging them into groups and instead based his arbitrary divisions upon characters of the phyllodes and, to a certain extent, features of the inflorescence.]

—Phyllodes not punctate, or, if obscurely so, then  $\pm$  oblong to narrow-linear,  $\pm$  straight and  $<6$  mm. wide (shrub or small tree 3-12 ft. high; phyllodes 1-4 cm. long and 2-6 mm. wide; pods white-woolly; flowering Sept.-Nov.):

*A. montana* Benth. in Hook. *Lond. J. Bot.* 1: 360 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 3: [t. 10] (1887); Rogers, *Field Guide Vict. Wattles* 74 (1968).

*Vern.*: Mallee Wattle. *Distr.*: BCGHJMNR—also S.A., Qd, N.S.W.

[A population of this species differing only in its glabrous pods has been accorded the name *A. montana* var. *psilocarpa* J. H. Willis in *Vict. Nat.* 73: 156 (1957) and has been recorded from Diapur west of Nhill.

Presumptive hybrids between this species and *A. aspera* have been recorded from the Bendigo district and have been briefly noted on p. 216.]

75. Phyllodes with 2  $\pm$  parallel nerves:

*A. verniciflua* A. Cunn. [See above.]

—Phyllodes with  $>2$  rather parallel nerves but sometimes the two lateral nerves rather weak (graceful tree to 15 ft. high; phyllodes up to 10 cm. long and 1-4 mm. wide; flowering Aug.-Nov.; far E. Gippsland):

*A. cognata* Domin in *Bibl. bot., Stuttgart* 89: 260 (1926).

*A. subporosa* F. Muell. *Plants indig. Colon. Vict.* 2: 24 (1863), pro parte;

*A. subporosa* F. Muell. var. *linearis* Benth. *Flor. aust.* 2: 382 (1864).

*Illust.*: Ewart, *Handb. For. Trees* t. 74 (1925), as *A. subporosa*; Rogers, *Field Guide Vict. Wattles* 84 (1968).

*Vern.*: Bower Wattle. *Distr.*: Z—also N.S.W.

76. Upper branches streaked with *brownish resinous ridges* and usually *greyish-white stripes* consisting of  $\pm$  matted and very minute appressed hairs; phyllodes  $<12$  cm. long,  $<7$  mm. wide,  $\pm$  *asperous* along the margin, blunt or with a minute  $\pm$  oblique point:

*A. dawsonii* R. T. Baker. [See p. 223.]

—Neither upper branches nor phyllodes combining all the above characters 77

77. Phyllodes  $>7$  cm. long 81

Phyllodes  $<7$  cm. long 78

78. Phyllodes pungent-pointed, or, if with only a small, hard,  $\pm$  oblique point, then nerves clearly reticulated; flowers-heads on solitary or twinned peduncles, never in short racemes 80

Phyllodes not pungent-pointed but sometimes with a small, hard, oblique point and then either flower-heads in short racemes or phyllodes  $<6$  cm. long and  $<5$  mm. wide 79

79. Phyllodes  $>6$  mm. wide (tree to about 15 ft. high; phyllodes  $\pm$  narrow-linear; flowering Sept.-early Dec.; W. Mallee):

*A. trineura* F. Muell. *Plants indig. Colon. Vict.* 2: 25 (1863).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 8: [t. 4] (1888); Rogers, *Field Guide Vict. Wattles* 89 (1968).

*Vern.*: Three-nerve Wattle. *Distr.*: BC—also S.A.

—Phyllodes  $<5$  mm. wide:

*A. montana* Benth. [See p. 234.]

80. Upper branches essentially *angular*, occasionally  $\pm$  pubescent; primary nerves  $<6$ ; minor nerves sometimes *prominently reticulated*; flower-heads on  $\pm$  glabrous peduncles usually  $>2$  mm. long; young phyllodes usually *densely pubescent* (erect or spreading shrub 1-5 ft. high; phyllodes 2-7 cm. long and 2-11 mm. wide,  $\pm$  narrow-linear; flowering May-Oct.):

*A. lanigera* A. Cunn. in *Field Geogr. Mem. N.S.W.* 345 (1825).

*Illust.*: Graham, *Curtis's bot. Mag.* 56: t. 2922, col. (1829); Baker, *Proc. Linn. Soc. N.S.W.* 20: t. 27 (1895); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 4 (1967); Rogers, *Field Guide Vict. Wattles* 86 (1968).

*Vern.*: Woolly Wattle (Hairy Wattle). *Distr.*: DJMNRVWZ—also Qd, N.S.W., A.C.T.

—Upper branches essentially *terete*, usually glabrous, primary nerves including the weaker ones  $>6$ ; minor nerves *rarely* prominently reticulated between the primary nerves; flower-heads sessile or on pubescent peduncles  $<2$  mm. long; young phyllodes usually *glabrous*



or almost so (usually a spreading tree up to 20 ft. high; phyllodes 3-8 cm. long and 2-10 mm. wide, narrow or  $\pm$  linear; flowering Nov.-Jan.):

*A. osswaldii* F. Muell. *Plants indig. Colon. Vict.* 2: 27 (1863).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 6: [t. 10] (1887); Ewart, *Handb. For. Trees* t. 76 (1925); Rogers, *Field Guide Vict. Wattles* 82 (1968).

*Vern.*: Umbrella Wattle. *Distr.*: ABCGHM—also W.A., N. Terr., S.A., Qd, N.S.W.

81. Phyllodes  $>25$  times as long as wide and  $<10$  mm. wide (erect or spreading tree 25-30 ft. high; phyllodes 15-40 cm. long or more and  $>1.5$  mm. wide; flowering Dec.-April and sometimes during other months; lower Murray R.):

*A. stenophylla* A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 366 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 6: [t. 5] (1887); Ewart, *Handb. For. Trees* t. 77 (1925); Rogers, *Field Guide Vict. Wattles* 85 (1968).

*Vern.*: Eumong. *Distr.*: AFG—also W.A., N. Terr., S.A., Qd, N.S.W.

—Phyllodes  $<25$  times as long as wide and  $>8$  mm. wide 82

82. Peduncles distinctly *white-pubescent*; phyllodes  $\pm$  *greyish-green* and *minutely mealy* when fresh,  $>15$  mm. wide, never truly falcate; primary and secondary nerves always *prominent*; flowers *bright yellow* ( $\pm$  pyramidal or spreading tree 20-40 ft. high; phyllodes 7-13 cm. long and up to 35 mm. wide, lanceolate to narrow-linear; funicle folded under the seed; flowering Sept.; eastern highlands):

*A. frigescens* J. H. Willis in *Vict. Nat.* 73: 158 (1957).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 81 (1968).

*Vern.*: Wattle. *Distr.*: NSZ—also N.S.W.

—Peduncles *glabrous* or *almost so*, rarely minutely pubescent; phyllodes *neither greyish-green nor* minutely mealy when fresh, sometimes  $<15$  mm. wide, sometimes falcate; primary and/or secondary nerves sometimes *obscure*; flowers *pallid* or *creamy-yellow* 83

83. Funicle *doubly surrounding* the seed; phyllodes  $\pm$  obtuse, narrowing abruptly towards the apex, never truly falcate, broadest *near or above the centre*, usually  $<7$  times as long as wide; young branches never glaucous; peduncles minutely *pubescent* or *asperulous* (tree 20-100 ft. high; phyllodes usually 7-16 cm. long and 7-30 mm. wide,  $\pm$  lanceolate to narrow-linear; flowering Aug.-Oct.):

*A. melanoxydon* R. Br. in Ait. f. *Hort. kew.* ed. 2, 5: 462 (1813).

*Illust.*: Curtis, *Student's Flor. Tasm.* 1: 120 fig. 36 c (1956); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 10 (1967); Rogers, *Field Guide Vict. Wattles* 80 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 240, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 468 (1971).

*Vern.*: Blackwood. *Distr.*: CDEJKMNPSTVWZ—also S.A., Qd, N.S.W., A.C.T., Tas.

—Funicle *folded* under the seed; phyllodes rarely obtuse and usually tapering gradually towards both ends, often falcate, broadest *near or below the centre*, usually >7 times as long as wide; young branches sometimes glaucous; peduncles *glabrous or almost so* (usually a spreading tree 15-50 ft. high; phyllodes 7-20 cm. long and 7-20 mm. wide; flowering Dec.-Mar.):

*A. implexa* Benth. in Hook. *Lond. J. Bot.* 1: 368 (1842).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 8: [t. 2] (1888); Galbraith, *Vict. Nat.* 77: 269 (1961); Rogers, *Field Guide Vict. Wattles* 79 (1968).

*Vern.*: Lightwood. *Distr.*: DHJMNPRSVWZ—also Qd, N.S.W., A.C.T.

84. Phyllodes <3.5 cm. long and <4 mm. wide, glabrous; flowers <20 per head (shrub to 15 ft. high; phyllodes  $\pm$  linear or narrow-linear; flowering Sept.; N.W. Mallee and rare):

*A. lineolata* Benth. in *Linnaea* 26: 626 (1855).

*Vern.*: Dwarf Myall. *Distr.*: BCG—also W.A., S.A.

—Phyllodes >3.5 cm. long and usually >4 mm. wide, often minutely pubescent; flowers usually >20 per head 85

85. Phyllodes >4 mm. wide, but if only 4 mm. wide, then >4 cm. long 87

Phyllodes <4 mm. wide, but if nearly 4 mm. wide, then <4 cm. long 86

86. Phyllodes <2 mm. wide; pods about 2 mm. wide (spreading tree 10-15 ft. high; phyllodes 3-8 cm. long; flowering Sept.-Oct.; confined in Victoria to the Murray flood plain about 5 miles south of Cowra Lagoon and 20 miles west of Merbein and very rare):

*A. loderi* Maiden in *J. roy. Soc. N.S.W.* 53: 209 (1920).

*Illust.*: Maiden, *For. Flor. N.S.W.* 3: t. 114 fig. B-E (1908), as *A. rigens*.

*Vern.*: Nealie. *Distr.*: A—also N.S.W.

—Phyllodes >2 mm. wide; pods 3-6 mm. wide (spreading tree up to 30 ft. high; phyllodes up to 10 cm. long; flowering Sept.; apparently confined to sandy tracts near Mildura, near Narrung, between Wood Wood and Piangil, also near Pira south of Nyah and rare.)

*A. sp.*—aff. *A. sowdenii* Maiden in *J. roy. Soc. N.S.W.* 53: 180 t. 11 (1920).

*Vern.*: Myall. *Distr.*: AFG.

[Although the features of Victorian specimens are remarkably similar to those of W. Aust. and S. Aust. trees, they differ in the slightly broader phyllodes, more numerous and more prominent nerves and slightly broader sepals. Precise relationships between this species and *A. sowdenii* cannot be established until more satisfactory material has been secured from this State. Putative hybrids between this species and another closely related to *A. pendula* A. Cunn. ex G. Don and also thought to be new have been found with both presumptive parents between Wood Wood and Piangil.]

87. Phyllodes totally glabrous but sometimes minutely farinaceous, foliage usually *yellowish or dark green*, hardly pendulous; flowers 40-60 or

occasionally more per head (tree up to 30 ft. high; phyllodes up to 7 cm. long and 8 mm. wide; flowering Aug.-Oct.; N. plains, rare):

**A. omalophylla** A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 365 (1842).

*A. homalophylla* auctt. plur.

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 6: [t. 1] (1887); Rogers, *Field Guide Vict. Wattles* 88 (1968), as *A. homalophylla*.

*Vern.*: Yarran. *Distr.*: MR—also Qd, N.S.W.

—Phyllodes always very minutely pubescent, never or very rarely farinaceous; foliage *usually silvery*, often markedly pendulous; flowers 10-60 or more per head 88

88. Flowers <35 per head; pods 4-8 cm. long and 10-20 mm. wide with wings 0.5-2 mm. wide *along the edge*, rather thick and somewhat woody; phyllodes thin and  $\pm$  *flexible* (erect tree to 30 ft., phyllodes usually 4.5-8 cm. long and 6-10 mm. wide; flowering during Spring; extremely rare in Victoria where known by only nine  $\pm$  moribund trees growing 5 miles south of Warracknabeal):

**A. pendula** A. Cunn. ex G. Don *Gen. Syst.* 2: 404 (1832).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 6: [t. 8] (1887); Rogers, *Field Guide Vict. Wattles* 87 (1968).

*Vern.*: Weeping Myall. *Distr.*: C—also Qd, N.S.W.

—Flowers >40 per head; pods usually 2.5-4.5 cm. long and 10-15 mm wide, wings *virtually absent* along the edge, usually *thin and almost papery*; phyllodes rather thick and  $\pm$  *rigid* (pyramidal or spreading tree 30 ft. high and sometimes as much across; phyllodes usually 4.5-11 cm. long and 5-10 mm. wide; flowering Aug.-Nov.):

**A. sp.**—aff. *A. pendula*.

*Illust.*: Rowlands, *Vict. Nat.* 80: 292 fig. 2 (1964).

*Vern.*: Myall. *Distr.*: AFG—also N.S.W.

[Presumptive hybrids between this species and *A. sp.*—aff. *A. sowdenii*—have been discussed briefly under the latter species.]

89. Phyllodes <4 cm. long and <5 mm. wide, *rigid*, tapering gradually into a *fine and sharp point* (shrub or tree 4-30 ft. high; phyllodes >1.5 cm. long and >2 mm. wide,  $\pm$  lanceolate or narrow-linear; flowering June-Nov.):

**A. oxycedrus** Sieber ex DC. *Prodr.* 2: 453 (1825).

*Illust.*: Ewart, *Handb. For. Trees* t. 80 (1925); Galbraith, *Vict. Nat.* 76: 186 (1959); Rogers, *Field Guide Vict. Wattles* 21 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 53, col. (1968); Baglin & Mullins, *Aust. Wattles* 22, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 471 (1971).

*Vern.*: Spike Wattle. *Distr.*: CDEJNPSTWZ—also S.A., N.S.W.

[*A. oxycedrus* appears to hybridize fairly freely with several closely related species. Hybrids with *A. longifolia* (Andr.) Willd. var. *sophora* (Labill.) F. Muell.

as the supposed second parent have been reported from between Nelson and Kentbrook in far south-western Victoria and at Sperm Whale Head. *A. mucronata* Willd. ex H. Wendl. var. *acuta* H. B. Williamson in A. J. Ewart, *Flor. Vict.* 608 (1931), described from specimens gathered near Halls Gap in the Grampians and near Warburton, probably represents a hybrid between *A. oxycedrus* and *A. mucronata* var. *longifolia* Benth. Similar material has been noted in the Plenty Ranges north of Melbourne, Cockatoo and at Mt. Observation near Marysville. A third hybrid for which typical *A. longifolia* (Andr.) Willd. is thought to be the second parent, has been recorded from Heatherton in the Melbourne district. All of these hybrids can be distinguished from *A. oxycedrus* by the length of the phyllodes (>4.5 cm.) and their density, and from the supposed parents by the phyllodes gradually tapering into sharp,  $\pm$  rigid points and often by the presence of small stipules.]

—Phyllodes never both <4 cm. long and <5 mm. wide, often *flexible*, sometimes ending in a small, sharp, hard point but *never* tapering into a fine rigid point 90

90. Phyllodes >2.5 times as long as wide and either <2.5 cm. wide or without finely resinous margins 92

Phyllodes <2.5 times as long as wide, or, if more, then phyllodes both 2.5 cm. wide and with finely resinous margins 91

91. Phyllodes <5 cm. long and usually <2 cm. wide (usually a spreading shrub 5 or 6 ft. high and sometimes to almost 12 ft. across; phyllodes obovate or oblanceolate, often  $\pm$  oblique, >10 mm. wide and >2 cm. long; nerves prominently reticulated; pods 3-7 cm. long, 2.5-5 mm. wide,  $\pm$  rounded, dark, sometimes glaucous, usually curved, hardly constricted between the seeds; flowers in rather loose spikes 1-2 cm. long, usually pale yellowish, appearing mostly during Oct.-Nov., but sometimes as early as May; alps and subalps):

*A. alpina* F. Muell. *Fragm. Phyt. Aust.* 3: 129 (1863).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 9: [t. 3] (1888); Rogers, *Field Guide Vict. Wattles* 22 (1968); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 527, col. (1968).

*Vern.*: Alpine Wattle. *Distr.*: RSVW—also N.S.W.

—Phyllodes >6.5 cm. long and >2.5 cm. wide (straggly shrub or small twisted tree to about 12 ft. high; phyllodes up to 14 cm. long and 6 cm. wide, oblanceolate or linear; flowering Sept.-Oct.; endemic to Victoria and confined to granitic declivities on Mt. Buffalo):

*A. phlebophylla* H. B. Williamson in Ewart *Flor. Vict.* 607 (1931).

*Vern.*: Buffalo Sallow Wattle. *Distr.*: R.

92. Nerves <10, running for most of the length of the phyllode,  $\pm$  parallel, often *clearly* reticulated 95

Nerves >10, running for most of the length of the phyllode,  $\pm$  parallel, *obscurely* reticulated 93

93. Phyllodes >12 mm. wide (pyramidal or spreading tree 15-40 ft. high; phyllodes 10-18 cm. long and up to 22 mm. wide, flowering May-

July; very rare and localized in Victoria and restricted to Newmerella and the sand hummocks near Lake Coringle near Orbost):

**A. maidenii** F. Muell. in *Linn. Soc. N.S.W. Macleay Mem. Vol. 222*: t. 28 (1893).

*Illust.*: Maiden, *For. Flor. N.S.W.* 6: t. 220 (1916).

*Vern.*: Maiden's Wattle. *Distr.*: W—also Qd, N.S.W.

—Phyllodes <11 mm. wide (E. Gippsland, or N.E. hills) 94

94. Flowers usually in loose spikes of <60; rachis often finely pubescent, usually visible between the flowers; smallest nerves irregular and with frequent cross-nerves (usually a spreading river-side tree 10-20 ft. high; phyllodes 6-17 cm. long and 4-9 mm. wide; flowering Aug.-Oct.):

**A. floribunda** (Vent.) Willd. *Spec. Plant.* 4: 1051 (1806).

*Mimosa floribunda* Vent. *Choix Plant.* 13: t. 13 (1803).

*Illust.*: Ventenat (l.c.); Maiden, *For. Flor. N.S.W.* 6: t. 216 fig. A-H (1916); Rogers, *Field Guide Vict. Wattles* 26 (1968); Baglin & Mullins, *Aust. Wattles* 25, col. (1968).

*Vern.*: White Sallow Wattle. *Distr.*: VWZ—also Qd, N.S.W.

—Flowers in dense spikes of >80; rachis glabrous, never visible between the flowers; smallest nerves regular and with very few cross-nerves (usually a rounded tree to 20 ft. high; phyllodes 9-20 cm. long and 3-10 mm. wide; flowering Sept.-Nov.):

**A. doratoxylon** A. Cunn. in *Field Geogr. Mem. N.S.W.* 345 (1825).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 10: [t. 1] (1888); Ewart, *Handb. For. Tree* t. 86 (1925); Rogers, *Field Guide Vict. Wattles* 24 (1968).

*Vern.*: Currawang. *Distr.*: RVW—also Qd, N.S.W., A.C.T.

95. Majority of phyllodes with  $\pm$  uneven and microscopically granular resinous margins; phyllodes >7 mm. wide and >12 cm. long; spikes >4 cm. long and >6 mm. diam. at anthesis (shrub or tree 3-15 ft. high; phyllodes up to 20 cm. long and 23 mm. wide; flowering Dec.-Feb.; E. Gippsland ranges):

**A. obtusifolia** A. Cunn. in *Field Geogr. Mem. N.S.W.* 345 (1825).

*Vern.*: Wattle. *Distr.*: WZ—also N.S.W.

—Majority of phyllodes with smooth and even margins; margins of phyllodes never microscopically granular nor resinous; phyllodes sometimes <7 mm. wide and sometimes <12 cm. long; spikes usually <4 cm. long and <6 mm. diam. at anthesis 96

96. Phyllodes <10 mm. wide 98

Phyllodes >10 mm. wide 97

97. Phyllodes >10 cm. long and >15 mm. wide, majority  $\pm$  falcate, very rarely quite straight, gradually narrowing towards the apex, usually obtuse; uppermost stems  $\pm$  glaucous (erect or spreading tree to 40 ft. high; phyllodes up to 16 cm. long and 35 mm. wide; flowering Nov.-

March; endemic in Victoria and confined to Mt. Buffalo, the Bogongs and Sassafras Gap on the Corryong-Omeo road):

*A. dallachiana* F. Muell. *Fragm. Phyt. Aust. 1*: 7 (1858).

*Illust.*: Mueller, *Icon. Aust. Acac. Dec. 9*: [t. 4] (1888); Galbraith, *Vict. Nat. 79*: 40 (1962); Rogers, *Field Guide Vict. Wattles 23* (1968).

*Vern.*: Catkin Wattle. *Distr.*: RV.

—Phyllodes usually <10 cm. long and <15 mm. wide, rarely otherwise, majority *quite straight*, very rarely slightly curved, narrowly elliptical or  $\pm$  ligulate, abruptly narrowing towards the apex; usually ending in a minute point; uppermost stems very *rarely* glaucous (shrub or tree 4-30 ft. high; phyllodes 5.5-16 cm. long and 7-35 mm. wide; flowering Aug.-Sept.):

*A. longifolia* (Andr.) Willd. *Spec. Plant. 4*: 1052 (1806).

*Mimosa longifolia* Andr. *Bot. Repos. 3*: t. 207, col. (1802);

*Mimosa sophoræ* Labill. *Nov. Holl. Plant. Specim. 2*: 87 t. 237 (1806);

*Acacia Sophoræ* (Labill.) R. Br. in Ait. f. *Hort. kew ed. 2* 5: 462 (1813):

*Illust.*: Andrews (l.c.); Labillardière (l.c.); Galbraith, *Vict. Nat. 77*: 21 (1960); Rogers, *Field Guide Vict. Wattles 27* (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 283, col.* (1968), as *A. sophoræ*; Baglin & Mullins, *Aust. Wattles 21, col.* (1968).

*Vern.*: Sallow Wattle. *Distr.*: DENPSTWXX—also S.A., Qd, N.S.W., Tas.

[The var. *sophoræ* (Labill.) F. Muell. *Plants indig. Colon. Vict. 2*: 30 (1863), known popularly as Coast Wattle, differs from the typical in its shorter and broader phyllodes which are <6 times as long as wide and usually much more obtuse. It is found in S. Aust., Qd, N.S.W. and Tas. The typical variety, characterized by longer and narrower phyllodes, seems to be confined to eastern Victoria beyond Lakes Entrance and is native to Qd and N.S.W. as well. It is doubtfully indigenous to S. Aust. and Tas.

Putative hybrids between *A. longifolia* and *A. oxycedrus* Sieber ex DC. have been briefly discussed under the latter species.]

98. Marginal gland always *absent*; phyllodes >5 cm. long and >4 mm. wide, always broadest near or below the-centre, usually flaccid:

*A. floribunda* (Vent.) Willd. [See p. 240.]

Marginal gland *present on some phyllodes* at least, or, if very obscure or absent, then phyllodes 5 cm. long and/or <4 mm. wide, sometimes broadest well above the centre, usually  $\pm$  rigid but sometimes flaccid

99. Phyllodes <8 mm. wide, rarely more; rachis of inflorescence clearly *visible between the distant flowers* at anthesis; flowers usually <35 per spike (erect or spreading tree 5-30 ft. high; phyllodes 3.5-22 cm. long and 0.5-10 mm. wide; flowering Aug.-Nov.):

*A. mucronata* Willd. ex H. Wendl. *Comment. Acac.* 46 t. 12 (1820).

*A. longissima* sens. H. B. Williamson in A. J. Ewart *Flor. Vict.* 606 (1931), non Hort. ex H. Wendl. (1820).

*Illustr.*: Wendland (*l.c.*); Galbraith, *Vict. Nat.* 78: 14 (1861); Rogers, *Field Guide Vict. Wattles* 25 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 406, col. (1968); Baglin & Mullins, *Aust. Wattles* 25, col. (1968).

*Vern.*: Narrow-leaf Wattle. *Distr.*: DJKNRSTWZ—also N.S.W., Tas.

[Hitherto Victorian populations of this species have been referred to the var. *dissitiflora* (Benth. ut sp.) Hook. f. *Flor. Tasm.* 1: 110 (1856), a name that must be replaced with var. *longifolia* Benth. in *Linnaea* 26: 625 (1855). This same variety has been recorded for N.S.W. and Tas. as well, but the typical variety of this highly polymorphic species has been recorded with certainty for Tas. only, although there are two sheets in the Melbourne Herbarium labelled simply "Victoria" without any other data.

Presumptive hybrids between this species and *A. oxycedrus* Sieber ex DC. have appeared at a number of stations and these have been discussed briefly under the latter species.]

—Phyllodes > 8 mm. wide, rarely less; rachis of inflorescence  $\pm$  obscured by flowers at anthesis; flowers usually > 40 per spike:

*A. longifolia* (Andr.) Willd. [See p. 241.]

100. Pinnæ in 1-3 pairs, pinnulæ in 3-6 pairs; flower-heads *solitary*, rarely in pairs, globular (usually a spreading shrub to 8 ft. high; flowering Aug.-Feb.):

*A. mitchellii* Benth. in Hook. *Lond. J. Bot.* 1: 387 (1842).

*Illustr.*: Rogers, *Field Guide Vict. Wattles* 12 (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 22, col. (1968).

*Vern.*: Mitchell's Wattle. *Distr.*: CDEJKNRW—also N.S.W., S.A. (far S.E.).

—Pinnæ in 2-25 pairs, pinnulæ in 10-50 or more pairs; flower-heads in racemes (shrubs or trees usually > 8 feet high) 101

101. Pinnulæ always > 2 cm. long and > 5 mm. wide, usually as much as 4.5 cm. long and 7-12 mm. wide, *finely pubescent on at least the lower surface*, very rarely totally glabrous (tree to 50 ft. high in Victoria; flowering Dec.-Feb.; introduced from N.S.W.):

\**A. terminalis* (Salisb.) Macbride in *Contr. Gray Herb. Harv.* new ser. 59: 7 (1919).

*Mimosa terminalis* Salisb. *Prodr. Stirp.* 325 (1796);

*Acacia elata* A. Cunn. ex Benth. in Hook. *Lond. J. Bot.* 1: 383 (1842).

*Illustr.*: Mueller, *Icon. Aust. Acac.* Dec. 12: [t. 7] (1888); Summerhayes in *Curtis's bot. Mag.* 154: t. 9214, col. (1930); Baglin & Mullins, *Aust. Wattles* 32, col. (1968)—all as *A. elata*.

*Vern.*: Cedar Wattle. *Distr.*: N.

—Pinnulæ between 8 mm. (very rarely less) and 20 mm. long and 2 mm. (very rarely less) and 5 mm. wide, *quite glabrous or nearly so*, lower

surface often *significantly paler* than upper (shrub or small tree 3-15 ft. high; flowering March-May):

**A. botrycephala** (Vent.) Desf. *Cat. Plant. Hort. reg. paris.* ed. 3:300 (1829).

*Mimosa botrycephala* Vent. *Descr. Plant. nouv.* 1: t. 1 (1800).

*Illust.*: Ventenat (l.c.); Sims, *Curtis's bot. Mag.* 42: t. 1750, col. (1815), as *A. discolor*; Ewart, *Handb. For. Trees* t. 88 (1925), as *A. discolor*; Baglin & Mullins, *Aust. Wattles* 32, col. (1968); Rogers, *Field Guide Vict. Wattles* 13 (1968); Scarth-Johnson, *Wildflowers N.S.W.* 51, col. (1968).

*Vern.*: Sunshine Wattle. *Distr.*: PSTWZ—also N.S.W., Tas.

—Pinnulæ usually <8-10 mm. long but always <1.8 mm. wide, *sometimes pubescent*, ± *uniformly coloured on both sides* 102

102. Interjugary glands always *absent* on the leaf-rachis 106

Interjugary glands always *present* on at least part of the leaf-rachis 103

103. Pinnulæ broadest *below the centre and narrowly lanceolate*, distinctly flattened, acute (spreading tree to about 80 ft. high; flowering Aug.-Oct.; highlands of E. Gippsland):

**A. silvestris** M. D. Tindale in *Vict. Nat.* 73: 162 (1957).

*Illust.*: Rogers, *Vict. Nat.* 77: 158 (1960).

*Vern.*: Red Wattle. *Distr.*: WZ—also N.S.W.

—Pinnulæ with rather parallel margins, very *rarely* narrowly lanceolate, ± *terete*, usually *obtusè* 104

104. Pinnæ 10-25; pinnulæ 30-65 pairs (spreading tree to 50 ft.; flowering Sept.-Nov.):

**A. mearnsii** De Wild. *Plant. Bequert.* 3: 61 (1925).

*A. mollissima* auctt. mult., non Willd. (1809).

*Illust.*: Ewart, *Handb. For. Trees* t. 90 (1925), as *A. mollissima*; Galbraith, *Vict. Nat.* 77: 291 (1961); Rogers, *Field Guide Vict. Wattles* 15 (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 467 (1971).

*Vern.*: Black Wattle. *Distr.*: CDEHJKMNPRTVWZ—also S.A., Qd, N.S.W., A.C.T., Tas.

—Pinnæ 2-8 pairs; pinnulæ 10-25 pairs, rarely more 105

105. Pinnæ 4-8 pairs; pinnulæ 15-25 pairs, rarely more, 5 mm. long or less, *pubescent with minute, usually appressed hairs*, very rarely totally glabrous (shrub or tree 4-16 ft. high; flowering May-June or occasionally as late as Aug.; extremely rare in Victoria and known from only a few specimens near Chiltern):

**A. deanei** (R. T. Baker) Welch et al. in *J. roy. Soc. N.S.W.* 65: 227 (1925).

*A. decurrens* (J. Wendl.) Willd. var. *Deanei* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 21: 348 (1896).

*Vern.*: Deane's Wattle. *Distr.*: R—also Qd, N.S.W.

—Pinnæ 2-8 pairs; pinnulæ 10-25 pairs, rarely more, 5-12 mm. long, *glabrous or with a few scattered hairs*, rarely significantly pubescent



(spreading tree to 30 ft. high; flowering Dec.-March but sometimes as early as Oct.):

*A. paucijuga* F. Muell. ex N. A. Wakefield in *Vict. Nat.* 72: 93 (1955).

*Illust.*: Rogers, *Field Guide Vict. Wattles* 17 (1968).

*Vern.*: Wattle. *Distr.*: HLMRVW—also Qd, N.S.W.

[M. D. Tindale in *Contr. N.S.W. Herb.* 4: 56 (1966) reduces *A. paucijuga* to a subspecies of *A. deanei* (R. T. Baker) Welch et al. and comments on the occurrence of intermediates between these two populations in New South Wales.]

106. Pinnæ <6 pairs, branchlets neither winged nor conspicuously angled; basal and apical pinnulæ much shorter than middle pinnulæ for any given pinna (spreading glaucous tree 15-20 ft. high; flowering July-Oct.; introduced from N.S.W.):

\**A. baileyana* F. Muell in *Trans. roy. Soc. Vict.* 24: 168 (1888).

*Illust.*: Mueller, *Icon. Aust. Acac.* Dec. 12: [t. 5] (1888); Summerhayes, *Curtis's bot. Mag.* 156: t. 9309, col. (1933); Rogers, *Field Guide Vict. Wattles* 19 (1968); Baglin & Mullins, *Aust. Wattles* 27, col. (1968).

*Vern.*: Cootamundra Wattle. *Distr.*: JN—also A.C.T. (naturalized).

[Three hybrid populations, with *A. baileyana* as a presumptive parent in each case, have been noted in Victoria—one near Chiltern in the north-east, another from Little River between Werribee and Geelong, and a third near Sherbrooke in the Dandenongs. The second parent of the first-mentioned is unknown, that of the second is apparently *A. decurrens* (J. Wendl.) Willd. while that of the third is almost certainly *A. dealbata* Link. These hybrids exhibit characters which place them more or less midway between their presumptive parents, but the most significant identifying feature seems to be the length of the pinnulæ which follow the pattern set by *A. baileyana* and in this respect the basal and apical pinnulæ are considerably shorter than the middle ones.]

—Pinnæ >6 pairs, or, if less, then branchlets winged or markedly angled; all, or nearly all, pinnulæ for a given pinna of equal length 107

107. Pinnulæ always >5 mm. long, totally glabrous or almost so; branchlets winged or conspicuously angled (spreading tree to 40 ft. high; flowering July-Oct.; introduced from Qd and N.S.W.):

\**A. decurrens* (J. Wendl.) Willd. *Spec. Plant.* 4: 1072 (1806).

*Mimosa decurrens* J. Wendl. *Bot. Beobacht.* 57 (1798);

*Acacia decurrens* (J. Wendl.) Willd. forma *normalis* Benth. *Flor. aust.* 2: 415 (1864).

*Illust.*: Ewart, *Handb. For. Trees* t. 89 (1925); Galbraith, *Vict. Nat.* 78: 298 (1962); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 13 (1967); Rogers, *Field Guide Vict. Wattles* 16 (1968); Baglin & Mullins, *Aust. Wattles* 28, col. (1968).

*Vern.*: Early Black Wattle. *Distr.*: NR—also Tas. & A.C.T. (naturalized).

[A presumptive hybrid between this species and *A. baileyana* F. Muell. has been briefly discussed under the latter species.]

—Pinnulæ <5 mm. long, or, if more (very rarely), then branchlets pubescent but *neither winged nor conspicuously angled*; pinnulæ usually pubescent 108

108. Pinnulæ 2·5-4·5 mm. long, or, if less (very rarely), then at least minutely pubescent with  $\pm$  appressed hairs, acute or  $\pm$  obtuse (usually an erect tree to 100 ft. high; flowering July-Oct.):

*A. dealbata* Link *Enum. Plant. Hort. berol.* 2: 445 (1822).

*Illust.*: Ewart, *Handb. For. Trees* t. 91 (1925); Galbraith, *Vict. Nat.* 76: 10 (1959); Totterdell in Burbidge, *Wattles Aust. Cap. Terr.* t. 12 (1967); Rogers, *Field Guide Vict. Wattles* 14 (1968).

*Vern.*: Silver Wattle. *Distr.*: HJKLMNRSTVWZ—also N.S.W., A.C.T., Tas.

[A presumptive hybrid between this species and *A. baileyana* F. Muell. has been briefly discussed under the latter species.]

—Pinnulæ <2·5 mm. long, totally glabrous or with a few scattered hairs along the margins,  $\pm$  obtuse (straggly or bushy tree to 30 ft. high; flowering Aug.-Oct.: endemic to Victoria, in central highlands):

*A. nano-dealbata* J. H. Willis in *Vict. Nat.* 73: 154 (1957).

*Vern.*: Dwarf Silver Wattle. *Distr.*: KNS.

[*A. continua* Benth. *Flor. aust.* 2: 322 (1964), *A. vestita* Ker in *Edwards' bot. Reg.* 9: t. 698 (1823) and *A. aneura* F. Muell. ex Benth. in *Linnaea* 26: 627 (1855) were doubtfully admitted to the Victorian flora by H. B. Williamson in A. J. Ewart's *Flor. Vict.* 582, 592, 604 (1931). No specimens have been found in this State to substantiate any of these records, and all three species must be deleted from the Victorian flora. *A. continua* has been recorded for the drier parts of N. Terr., S. Aust. and N.S.W. and is characterized by pungent, rigid,  $\pm$  recurved and terete phyllodes about 1·3 cm. long clearly decurrent on the branches. Generally it is an erect shrub 4·5 ft. high and favours rocky places. *A. vestita*, a species endemic to New South Wales, has been reported from the Delegete district close to Victoria's eastern border. It is usually a spreading pubescent shrub up to about 10 ft. high with  $\pm$  oblique elliptical phyllodes about 1·5-2 cm. long and 6-10 mm. wide and small flower-heads in racemes 1·5-5 cm. long. The Mulga (*A. aneura*) is usually an erect tree up to 30 ft. or more, frequenting large areas of inland Australia and is well known in southern New South Wales. The phyllodes of this species vary greatly in size but usually they are about 4-10 cm. long and 2-6 mm. wide with several  $\pm$  faint and parallel nerves. Its flowers are arranged in short spikes 1-2 cm. long on peduncles usually 6-12 mm. long.]

### Family CÆSALPINIACEÆ

#### CASSIA L. (1753)

1. Leaflets *densely pubescent* (at least on under-sides); stipules early caducous 3
- Leaflets (or phyllode) *virtually glabrous* or with only minute scattered hairs 2

2. Mid-nerves *prominent* on under-side of *revolute* leaflets which are in 6-10 pairs; stipules 4-6 mm. long, *linear to subulate, persistent* (stipellæ also conspicuous); flowers 2-4, *umbellate* on a common peduncle 2-5 cm. long; petals >10 mm. long (rocky slopes in E. Gippsland):

**C. aciphylla** Benth. in A. Gray in *U.S. explor. Exped. 15* (Bot. 1): 465 (1854).  
*C. revoluta* F. Muell. in *Trans. Vict. Inst.* 120 (1855);  
*C. australis* Sims var. *revoluta* (F. Muell.) Benth. *Flor. aust.* 2: 286 (1864).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 199 (1970); Ewart, *Flor. Vict.* fig. 252 (1931), as *C. australis*.

*Vern.*: Sprawling Cassia. *Distr.*: SVWZ—also N.S.W., A.C.T.

—Mid-nerves often *inconspicuous* on under-side of leaflets which are in 1-5 pairs (or absent); stipules *minute, triangular, falling away early*; flowers 3-10 in short *racemes*; petals <8 mm. long:

**C. nemophila** A. Cunn. ex Vogel *Synops. Gen. Cassiæ* 47 (1837).  
*C. eremophila* R. Br. in *Sturt Exped. Cent. Aust.* 2: Bot. App. 78 (1849).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 159, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 588 A-D (1948); Ewart, *Flor. Vict.* fig. 253 (1931); Galbraith, *Wildflowers Vict.* ed. 3: t. 61 (1967); King, *Wild Life (Melb.)* 8: 69 (1946); Reeves, *ibid.* 6: 271 (1944); Mueller, *Key Syst. Vict. Plants* 2: fig. 49 (1886)—all but the first as *C. eremophila*.

*Vern.*: Desert Cassia. *Distr.*: ABCFGMNV—inland parts of Aust.

A highly polymorphic species, of which three varieties (variously linked by transitional forms) may be distinguished in Victoria, as follows:

Petioles *terete* or not manifestly flattened

Leaflets *terete* or very narrow-linear, in 1-2 pairs, the lower (or only) pair >2 cm. above leaf-base; pod <1 cm. wide:

var. *nemophila*

—widely distributed and frequent in the Mallee (from the Far N.W. to Dimboola district), with very isolated and rare occurrences on the Werribee & Maribyrnong Rivers and at Suggan Buggan (E. Gippsland)—also W.Ä., S.A., N.S.W., Qd, N.Terr., Cent. Aust.

Leaflets *conspicuously flattened*, in 2-5 pairs, the lowest pair <2 cm. above leaf-base; pod >1 cm. wide:

var. *coriacea* (Benth.) Symon in *Trans. roy. Soc. S. Aust.* 90: 124 (1966).

*C. sturtii* var. *coriacea* Benth. *Flor. aust.* 2: 288 (1864);

*C. sturtii* sens. Williamson in Ewart *Flor. Vict.* 612 (1931),  
 non R. Br. (1849).

—widespread through Murray Valley (upstream as far as Swan Hill, with isolated occurrence at Nathalia), also at Lake Tyrrell and in

W. Wimmera—also W.A., S.A., N.S.W., Qd,  
N.Terr., Cent. Aust.

Petioles distinctly *phyllodineous*, narrowly cuneate and *vertically flattened* (>2 mm. broad); leaflets in 1 terminal pair or often absent, acuminate at apex; pod <1 cm. wide:

var. *platypoda* (R. Br.) Symon in *Trans. roy. Soc. S. Aust.* 90: 122 (1966).

*C. eremophila* var. *platypoda* (R. Br.) Benth. *Flor. aust.* 2: 288 (1864);

*C. platypoda* R. Br. in Sturt *Exped. Cent. Aust.* 2: Bot. App. 78 (1849).

*Illust.*: Mueller, *Plants indig. Colon. Vict.* 1: t. 25 (1864/5), as *C. platypoda*.

—occasional in Murray Mallee in and downstream from Hattah Lakes Nat. Park.—also S.A., N.S.W., Qd, N.Terr., Cent. Aust.

3. Leaves 3-6 cm. long, *grey-green*; leaflets close-set, *linear*, <5 mm. wide; inflorescence an axillary raceme of 4-12 fragrant flowers; petals <1 cm. long; stamens *all* fertile; pod 4-8 cm. long:

*C. artemisioides* Gaudich. in DC. *Prodr.* 2: 495 (1825).

*Illust.*: Scarth-Johnson, *Wildflowers N.S.W.* 53, col. (1968); Black, *Flor. S. Aust.* ed. 3: fig. 589 (1948); Myers in Turner, *Forage Plants Aust.* t. opp. 28 (1891); Everard, *Wild Flowers World* t. 130 fig. G, col. (1970).

*Vern.*: Silver Cassia. *Distr.*: GM—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[The species, although recorded from the Wimmera, Swan Hill (at Benjeroop) and Echuca districts, has not been observed in Victoria this century; it would appear either that old recordings were the result of misidentification or that *C. artemisioides* has become extinct in the State.]

—Leaves 5-10 cm. long, *bright green*; leaflets *obliquely elliptical*, >5 mm. wide; inflorescence a terminal or axillary corymbose raceme of 3-5 flowers; petals >1 cm. long; only 7 lower stamens fertile; pod 8-14 cm. long:

\**C. tomentosa* L. f. *Suppl. Plant.* ed. 13: 231 (1781).

*Illust.*: McMinn & Maine, *Ill. Manual Pacific Coast Trees* 247 (1935).

*Vern.*: Downy Cassia. *Distr.*: E (Portland district).

[Another tropical S. American species, *C. coluteoides* Colladon, is a popular winter-flowering shrub of Victorian gardens, the foliage being much less hairy and the golden flowers larger than in *C. tomentosa*; it is said to be naturalized in a few parts of N.S.W. and Qd.

In Ewart's *Flor. Vict.* 612 (1931), Williamson admits *C. desolata* F. Muell. in *Linnæa* 25: 389 (1852) as "doubtfully recorded for Victoria". This species of arid terrain does not seem to approach any nearer to Victoria than the Barrier Range (N.S.W.), and specimens ascribed to the Murray River have doubtless been mis-determined. *C. desolata* is distinguished by its flat elliptic leaflets (in about 3 pairs) that are densely hoary-pubescent.



10. Glabrous twiner; leaves  $>1$  cm. broad, with a *pair of stipellæ* just below base of lamina; flowers in *racemes* longer than leaves; pod  $>3$  cm. long  
*Hardenbergia* (p. 312)  
 Shrubs or semi-shrubs; leaves  $\pm$  hairy beneath, 1 cm. broad or less, *without stipellæ*; flowers in small *axillary clusters* shorter than leaves; pod  $<2.5$  cm. long  
*Hovea* (p. 281)
11. Decumbent  $\pm$  hairy herb; pods coiled, *jointed* and beset with long *hooked spiny appendages*  
*\*Scorpiurus* (p. 308)  
 Rigid shrub with very slender spiny branches; leaves alternate remote; pods linear, *glabrous, constricted between the seeds*  
*\*Alhagi* (p. 307)  
 Shrubs or semi-shrubs, the branches rarely spine-tipped (if so, the leaves opposite or pods triangular); pods neither jointed, appendaged nor constricted between the seeds 12
12. Leaves opposite and *decussate*, glabrous,  $<5$  mm. wide, with incurved margins; stipules *absent*  
*Eutaxia* (p. 273)  
 Leaves various; if regularly opposite, then either hairy or stipulate or not decussate 13
13. Stamens *all free* (except sometimes at very base); pod seldom stalked 16  
 Stamens *all united* in a tube (open on the upper side); stipules and floral bracteoles present; pod often stalked; ovules several 14
14. Leaves  $>1$  cm. broad, *usually opposite*; calyx yellowish-villose; pod *winged* along the upper suture, opening along *lower suture*  
*Platylobium* (p. 277)  
 Leaves  $<1$  cm. broad, *usually alternate*; calyx glabrous or sprinkled with short hairs; pod *not winged*, opening along *both sutures* 15
15. Leaves linear, *with incurved margins*; calyx pale, the bracteoles close beneath it; anthers *alternately long and short*  
*Templetonia* (p. 281)  
 Leaves *flat or revolute*; if ever concave above (rarely), then the calyx dark and bracteoles remote; anthers *all equal*  
*Bossia* (p. 278)
16. Stipules *present* (sometimes very minute); floral bracteoles *persistent*; ovules 2; pod ovoid,  $<7$  mm. long; seeds carunculate  
*Pultenaea* (p. 259)  
 As for the last, but stipules always *very minute*, some stamens *adnate* to claws of petals, and seeds *without a caruncle* (shrubs of sandy Graminians and Mallee tracts; leaves narrow, revolute, often in dense fascicles)  
*Phyllota* (p. 273)
- Both stipules and bracteoles absent or deciduous 17
17. Pod *triangular*; seed carunculate; leaves *always alternate*, exstipulate; bracteoles absent  
*Daviesia* (p. 256)  
 Pod *ovoid or oblong*; seed without a caruncle; leaves irregularly *opposite or in whorls of 3* 18
18. Leaves  $>4$  mm. wide (usually much more); pods often *villose*, 3- to several-seeded,  $>7$  mm. long, *not divided longitudinally*  
*Oxylobium* (p. 253)  
 Leaves  $<4$  mm. wide; pods slightly and *shortly hairy*, several-seeded,  $>7$  mm. long, with a *longitudinal partition* inside (mountain shrub to 5 ft. high)  
*Mirbelia* (p. 253)

- Leaves <4 mm. wide; pods *shaggy-villose*, 2-ovulate and 1- or 2-seeded;  
<7 mm. long (heathland shrub  $\pm$  2 ft. high) *Aotus* (p. 274)
19. Leaves *paripinnate*, with 1 to several pairs of leaflets and a terminal  
tendrill (climbing herbs) 35  
Leaves *imparipinnate*, with 5 to many leaflets; tendrils absent (non-  
climbing) 36  
Leaves normally *trifoliolate*, without tendrils 20
20. Margin of leaflets *quite entire* 25  
Margin of leaflets variously *toothed or crenulate* 21
21. Leaflets finely *dotted with immersed black glands*, the apical one remote  
from the other two; calyx densely villose *Psoralea* (p. 299)  
Leaflets *not gland-dotted*, the apical one sessile and approximate or, if  
ever remote, then the calyx not densely villose 22
22. Flowers *solitary* in axils, pod straight; keel *beaked*; stamens all *united*  
*\*Ononis* (p. 285)  
Flowers *capitate or in racemes* (if ever solitary, then the pod spirally  
coiled); keel *obtus*; upper stamen *free* 23
23. Pod *enclosed in the calyx*; flowers in usually dense globular or cylindrical  
heads (low herbs with entire stipules) *\*Trifolium* (p. 291)  
Pod *exceeding the calyx* 24
24. Pod short, falcate or *spirally coiled*, usually *indehiscent*; flowers either in  
clusters of 1-5, in ovoid heads or in racemes on the slender peduncles  
(stipules usually toothed) *\*Medicago* (p. 286)  
Pod linear, *curved*, much longer than the calyx, *dehiscent*; flowers erect,  
1-8 in the clusters (plants low, herbaceous, often fragrant)  
*Trigonella* (p. 286)  
Pod ovoid, *straight, indehiscent*; flowers drooping, numerous in slender  
elongated racemes (tallish,  $\pm$  fragrant herbs) *\*Melilotus* (p. 290)
25. Pod >1 cm. long (often much more); shrubs, twiners or prostrate  
perennials 27  
Pod <1 cm. long (usually much less); plants *herbaceous, not climbing*;  
leaflets mostly linear; flowers pink or purplish 26
26. Stipules small, wholly *setaceous*; flowers in dense *axillary clusters*  
(E. & N.E. perennial, with obtuse mucronate leaflets)  
*Lespedeza* (p. 308)  
Stipules small but *not setaceous*; flowers in *long-pedunculate racemes*  
(perennials, the leaves finely dotted with black glands)  
*Psoralea* (p. 299)  
Stipules large (to 4 cm. long), with *setaceous tips*; flowers in *cylindrical*  
*heads* (annual, the calyx becoming burr-like in fruit)  
*\*Trifolium* (p. 291)
27. Herbaceous perennials, twiners or climbers; stipules *present* and usually  
also stipellæ below the leaflets; flowers pink, red or bluish; upper  
stamen  $\pm$  *free* from the other united 9 32  
Medium to tall shrubs; stipules and stipellæ *absent*; flowers yellow or  
white; stamens *all united* in a tube 28  
Small shrubs; flowers yellow or red, >12 mm. long; stamens *all free*  
*Gompholobium* (p. 254)

28. Flowers *numerous*, yellow, in *lax* racemes; staminal tube *open above* (soft-wooded and mostly glabrous forest shrub with terete, often glaucescent branches and broadly obovate leaflets) *Goodia* (p. 282)  
Flowers *few*, axillary or in *short dense* terminal racemes; staminal tube completely *closed* 29
29. Branchlets *spine-tipped*; calyx small, virtually undivided (the sepal points minute); pod flat, *winged* along lower margin; seed without a strophiole (glabrous bushes occasionally escaping from hedges in southern areas) *\*Calycotome* (p. 283)  
Branchlets *never spiny*; calyx manifestly 2-lipped; pod *wingless*, but sometimes thickened on margin; seed  $\pm$  obviously strophiolate (escapes from cultivation) 30
30. Upper lip of hairy calyx *deeply cleft* into 2 lobes (for at least half its length); flowers yellow, shortly racemose *\*Genista* (p. 283)  
Upper lip of calyx *shortly bidentate* at apex 31
31. Leaves *crowded* on short shoots; calyx relatively large, *tubular*, hairy, deeply 2-lipped, *soon deciduous*; corolla white; pod long-stalked, with wing-like ridges along lower margin (arborescent plant) *\*Chamæcytissus* (p. 284)  
Leaves *scattered* on long, rigid, strongly 5-angled branchlets; calyx *not tubular*, small, often  $\pm$  glabrous, very shortly 2-lipped, *persisting* in fruit; corolla large (15-20 mm.), *yellow*; style long and *spirally inrolled* pod without ridges *\*Sarthothamnus* (p. 284)  
As for the last, but branchlets not strongly angular (although grooved), corolla *white* and the short style curved but *never inrolled* *\*Cytisus* (p. 284)
32. Flowers bright or dull red, >2 cm. long, *hardly exceeding* the broad leaflets (trailers and climbers) *Kennedia* (p. 311)  
Flowers pale to rosy pink or purplish, <2 cm. long, in racemes usually *much longer than* the leaflets 33
33. Pod flat, pale, breaking up into 3 or more *separate, indehiscent, 1-seeded articles* which are covered with short, *hooked clinging hairs* *Desmodium* (p. 307)  
Pod *not breaking into articles*; if hairy, then the hairs soft, *straight* and not clinging 34
34. Leaflets <2 cm. broad,  $\pm$  *hairy*; flowers <10 mm. long, bluish or purplish (small twiners or prostrate herbs) *Glycine* (p. 312)  
Leaflets ovate, 2-5 cm. broad, *glabrous*; flowers  $\pm$  15 mm. long, rosy pink (tall climber, escaping from gardens chiefly in coastal areas) *\*Dolichos* (p. 312)
35. Stems  $\pm$  terete or slightly angled, never winged; stipules *much smaller* than leaflets (3-10 pairs); calyx teeth not leaf-like; keel *adhering* to the wings *\*Vicia* (p. 309)  
As for the last, but stipules *as large as* the leaflets (1-3 pairs) and calyx-teeth also leaf-like *\*Pisum* (p. 311)  
Stems manifestly angled or winged; stipules *smaller than* leaflets (1-2 pairs); calyx-teeth not leaf-like; keel *free* from the wings *\*Lathyrus* (p. 310)



36. Leaflets  $>6$ , *silky-hairy*, *digitate* at the end of the long petiole; stamens *all united*, the anthers alternately long and short (herbs with flowers in stout terminal racemes, the corolla often blue) *\*Lupinus* (p. 285)  
 Leaflets *not digitate* or, if so (rarely), then not *silky-hairy* but dotted with immersed black glands [*Psoralea*]; stamens *not all united* 37
37. Leaflets and stipules *dentate* (hairy annual to 2 ft., with small axillary flowers) *\*Cicer* (p. 311)  
 Leaflets *entire*; flowers usually on long-pedunculate racemes 38
38. Pod *small*, *1-seeded*, either enclosed by the calyx or protruding and prickly 40  
 Pod neither jointed *nor* small and 1-seeded, never prickly 41  
 Pod *jointed*, separating into 1-seeded articles (herbs) 39
39. Flowers  $<1$  cm. long, *yellow or white*, few together on filiform peduncles (small annuals) *\*Ornithopus* (p. 306)  
 Flowers  $>1$  cm. long, *bright red*, scented, in stoutly pedunculate dense racemes (perennial to 4 ft.) *\*Hedysarum* (p. 308)
40. Leaves finely *dotted with black glands*; flowers lilac, blue or purplish, racemose; pod indehiscent, downy, *without prickles*, hardly longer than calyx *Psoralea* (p. 299)  
 As for the last, but pod exceeding the calyx and covered by *straight or hooked prickles* (aromatic) *Glycyrrhiza* (p. 305)  
 Leaflets *not glandular*; flowers yellow or red in dense *heads*; pod *glabrous*, reticulate, *enclosed* *\*Anthyllis* (p. 298)  
 Leaflets *not glandular*, strongly veined; flowers pink, in long-pedunculate dense *racemes*; pod *exceeding calyx*, indehiscent, flat, curved and toothed on margin *\*Onobrychis* (p. 309)
41. Leaflets 5, the lower pair close to stem and *resembling leafy stipules*; flowers yellow, pinkish or red, in clusters terminating axillary peduncles; filaments alternately long and short; pods terete, straight, with membranous partitions between the minute transverse seeds (herbs) *Lotus* (p. 296)  
 Leaflets usually  $>5$  or, if 5, then the lower pair *not* resembling stipules 42
42. Anthers tipped with a *small gland* (slender  $\pm$  glabrous shrub to 8 ft., with 9-21 leaflets and lilac flowers) *Indigofera* (p. 298)  
 Anthers *without glands* 43
43. Pod linear, *cylindrical* (seldom compressed), not bladdery; style *not bearded* 45  
 Pod *inflated or bladdery*; style *bearded* along the inner margin 44  
 Pod *ovoid, swollen*, with 4-20 seeds; style *beardless*; flowers usually single, yellow,  $>12$  mm. long *Gompholobium* (p. 254)
44. Flowers  $<2$  cm. long; petals *obtus*e, the wings and keel *not much* shorter than the standard *Swainsona* (p. 301)  
 Flowers  $>2$  cm. long; petals *acutish*, scarlet, the standard and keel about 4 times as long as the wings (pod silvery, shining, very inflated, to 6 cm. long) *\*Sutherlandia* (p. 306)
45. Tree with *spiny stipules*, white scented flowers and rather broad, *flattened*, pendulous pods *\*Robinia* (p. 306)  
 Semi-shrubs or herbs, *without spines*; pods *terete* 46

46. Annual with 15-25 *silky-hairy* leaflets; pods *falcate*  
 \**Astragalus* (p. 306)  
 Perennials (2-4 ft. high) with *glabrous* leaflets; pods *straight* 47
47. Leaves 4" long or more, the leaflets *glandular-dotted*; calyx-teeth *not*  
*setaceous* (bark and roots exceedingly sweet to the taste)  
*Glycyrrhiza* (p. 305)  
 Leaves <4" long, *not glandular-dotted*; calyx-teeth *setaceous*  
 \**Galega* (p. 306)

[Except for the first (*Podalyrieæ*) and last (*Phaseoleæ*), tribes of *Papilionaceæ* are hereafter set out according to the arrangement adopted by Clapham, Tutin and Warburg in *Flora of the British Isles* ed. 2, pp. 329-362 (1962).]

### Tribe PODALYRIEÆ

#### MIRBELIA Sm. (1805)

*M. oxylobioides* F. Muell. *Fragm. Phyt. Aust.* 2: 154 (1861).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 411, col. (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 45 A & B (1886); Schönfeld in Mueller, *Plants Colon. Vict.* 1 (Lithogr.): suppl. t. 14 (1864/65); Burbidge, *Flor. Aust. Cap. Terr.* fig. 202 (1970).

*Vern.*: Mountain Mirbelia. *Distr.*: JRSVWZ—also N.S.W., A.C.T.

#### OXYLOBIUM Andr. (1807)

1. Leaf-margins *flat*, often  $\pm$  *undulate*; either the habit prostrate or the foliage lobed 4  
 Leaf-margins *recurved*, never undulate; plant never prostrate nor foliage lobed, the leaves often in whorls of 3 2
2. Stipules *present*; ovary *stalked*; veins on upper-surfaces of leaves with *few or no intervening tubercles*; lining of pod  $\pm$  *silky* (subalpine to alpine):

*O. alpestre* F. Muell. in *Trans. phil. Soc. Vict.* 1: 38 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 531, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 73 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 203 (1970). Morcombe, *Aust. Wildflowers* t. on [19], col. (1970).  
*Vern.*: Alpine Oxylodium (Mountain Shaggy-pea). *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Stipules *absent*; ovary *sessile* or nearly so; upper surfaces of leaves showing *numerous minute tubercles* between veins; lining of pod *glabrous* 3

3. Leaves  $\pm$  *elliptical*, usually with recurved mucro, mostly <3 cm. long, <6 times as long as wide and mostly <4 times; flowers forming *dense corymbs* in terminal axils (subalpine to alpine shrub 1-6 ft. high):

*O. ellipticum* (Labill.) R. Br. in Ait. f. *Hort. kew.* ed. 2, 3: 10 (1811).

*Gompholobium ellipticum* Labill. *Nov. Holl. Plant. Specim.* 1: 106, t. 135 (1806).

*Illust.*: Labillardière (*l.c.*); Hooker in *Curtis's bot. Mag.* 60: t. 3249, col. (1833).  
*Vern.*: Common Oxylobium (Golden Shaggy-pea). *Distr.*: SVWZ—also Tas., N.S.W., A.C.T., Qd.

—Leaves narrowly elliptic to *linear lanceolate*, 3-8 cm. long, >6 times as long as wide; flowers in *loose* axillary corymbs along slender branches (lowland to montane tree 6-20 ft. tall):

*O. arborescens* R. Br. in *Ait. f. Hort. kew.* ed. 2, 3: 10 (1811).

*Illust.*: Reeves in Willis, *Vict. Year Book* 76: t. opp. 19 (1962), as *O. ellipticum* var. *angustifolium*; Edwards' *Bot. Register* 5: t. 392, col. (1819).

*Vern.*: Tall Oxylobium (Tall Shaggy-pea). *Distr.*: STVZ—also Tas., N.S.W.

4. Leaves <2.5 cm. long, *ovate*, *entire*; flowers apricot-hued; ovules usually 8 (prostrate semi-shrub with woody rhizome):

*O. procumbens* F. Muell. in *Trans. phil. Soc. Vict.* 1: 37 (1855).

*Vern.*: Trailing Oxylobium (Trailing Shaggy-pea). *Distr.*: JNRSTVZ—also N.S.W., A.C.T.

—Leaves >3 cm. long,  $\pm$  *lanceolate* in outline, with 1 to several prominent *spine-tipped lobes*; flowers bright yellow; ovules usually 4 (erect shrub of far E. Gippsland, to 6 ft. high or more):

*O. ilicifolium* (Andr.) Domin in *Biblioth. bot., Stuttgart* 22 (Heft 89): 720 (1925).

*Pultenæa ilicifolia* Andr. *Bot. Repos.* 5: t. 320 (1803);

*O. trilobatum* (R. Br., ut *Podolobium* sp.) Benth. *Flor. aust.* 2: 25 (1864).

*Illust.*: Carey, *Proc. Linn. Soc. N.S.W.* 55: 719 (1930)—veg., as *O. trilobatum*; Edwards in *Curtis's bot. Mag.* 36: t. 1477, col. (1812), as *Podolobium trilobatum*.

*Vern.*: Prickly Oxylobium (Prickly Shaggy-pea). *Distr.*: Z—also N.S.W., Qd.

[The S.W. Australian *O. lanceolatum* (Vent.) Druce, a tall shrub or small tree with leaves 2-5" long, was observed (July 1957) growing spontaneously in Frankston district—along an aqueduct between the Old Mill and Langwarrin road.

The genus *Chorizema* differs from *Oxylobium* in having *alternate* leaves and corolla-keel *shorter* than the wings. No species are indigenous to Victoria, but the West Australian *C. cordatum* Lindl. ("Flame Pea") has been noted as a local escape from cultivation at Oliver's Hill, Frankston. It is a wiry, straggling, glabrous plant, with prickly-toothed ovate leaves 1-2" long and spectacular orange-and-magenta flowers in loose axillary racemes.]

### GOMPHOLOBIUM Sm. (1798)

1. Leaves *pinnate*; leaflets 5-7, narrow-linear,  $\pm$  1 cm. long; stems *densely tuberculate*; keel of corolla almost glabrous, pale yellow at base but *black towards apex* (very small,  $\pm$  decumbent shrub of far E. Gippsland):

*G. glabratum* Sieber ex DC. *Prodr.* 2: 106 (1825).

*Illust.*: Maiden, *Ill. N.S.W. Plants* t. 15 (1908); L. H. W., *Aust. Plants* 2<sup>nd</sup>: 194 (1964).

*Vern.*: Dainty Wedge-pea. *Distr.*: Z—also N.S.W.

—Leaves *trifoliolate*; stems *without tubercles* 2

2. Plant  $\pm$  *pubescent*, often *decumbent*; leaflets  $\pm$  1 cm. long or less; flowers *apricot to reddish*, on pedicels usually *shorter than calyx*; corolla-keel *not* (or only *obscurely*) fringed with hair:

*G. ecostatum* R. Kuchel in Hj. Eichler *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 182 (1965).

*G. minus* sens. Williamson in Ewart *Flor. Vict.* 614 (1931) *atque auctt. plur., non Sm.* (1805).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 15, col. (1968).

*Vern.*: Dwarf Wedge-pea. *Distr.*: BCDEJKPT—also S.A., N.S.W. (Goulburn district), Tas. (Flinders Id).

[Victorian and South Australian populations, hitherto erroneously referred to *G. minus* Sm., can readily be distinguished from the latter species (N.S.W. only) by the *absence* of vertical ridges along the junctions of the 5 calyx-lobes in unopened flower-buds.]

—Plant *glabrous* or nearly so; leaflets usually  $>1$  cm. long; flowers *yellow*, on pedicels *longer than calyx*; corolla-keel *fringed* 3

3. Leaflets usually  $<1$ " long and  $<2$  mm. wide, with variably *revolute* margins; standard  $<2$  cm. wide, clear yellow inside but bronzy on outside; keel *shortly white-ciliate* with woolly hairs  $<0.5$  mm. long (spreading, widely ranging shrub  $<2$  ft. high):

*G. huegelii* Benth. in Endl. et al. *Enum. Plant.* 29 (1837).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 75 (1967); Reeves in Barrett, *Aust. Wildflower Book* t. opp. 44, col. (1942); Reeves, *Wild Life (Melb.)* 9: 221 (1947); Charsley, *Wildflowers Melbourne* t. 13, col. (1867); Burbidge, *Flor. Aust. Cap. Terr.* fig. 219 (1970); Garnet, *Wildflowers Wilson's Prom.* t., n. 493 opp. 142 (1971).

*Vern.*: Common Wedge-pea (Karalla). *Distr.*: CDEJMNPRSTVWZ—also Tas., N.S.W., A.C.T., (?) Qd.

—Leaflets  $1.2$ " long, often  $2.3$  mm. wide, *flat* or with slightly recurved margins; standard  $>2$  cm. wide; keel densely fringed with *coarse ribbon-like hairs* 1 mm. long (erect, East Gippsland shrub  $2.3$  ft. high):

*G. latifolium* Sm. in *Ann. Bot., Lond.* 1: 505 (1805).

*Illust.*: Labillardière, *Nov. Holl. Plant. Specim.* t. 133 (1805); Hurley & L. H. W., *Aust. Plants* 2<sup>nd</sup>: 185-86 (1964); Sulman, *Wildflowers N.S.W.* 1: t. 29 (1913).

*Vern.*: Giant Wedge-pea. *Distr.*: TWXZ—also N.S.W., Qd.

[The closely related genus *Burtonia* R. Br. differs in having only 2 ovules—there are 4 to several in *Gompholobium*. In 1957 several plants of the mauve-flowered, Western Australian *B. scabra* R. Br. were found growing spontaneously along the Dargo road near Gladstone Ck (7-8 miles N.N.E. of Briagolong), Gippsland. This remarkable occurrence probably represents an accidental or deliberate introduction by earlier miners from the W.A. goldfields. *B. scabra* is a handsome ericoid under-shrub, the leaves with 3 sessile narrow-linear leaflets 8-16 mm. long.]

### SPHÆROLOBIUM Sm. (1805)

Shrub slender, *rush-like and lax*, <2 ft. high; branchlets elongated, *terete, smooth, never spiny*; flowers *yellow*, sometimes with red markings; calyx 3 mm. long (widespread on heaths):

*S. vimineum* Sm. in *Ann. Bot., Lond.* 1: 509 (1805).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 64, col. (1968); *Curtis's bot. Mag.* 25: t. 969, col. (1806); Sulman, *Some familiar Wildflowers* t. 45 [1913]; J. C. Loudon, *Arbor. & Frutic. Brit.* 2: 569 [2 fig.] (1838); Garnet, *Wildflowers Wilson's Prom.* fig. 521 (1971).

*Vern.*: Leafless Globe-pea. *Distr.*: CDEJKNPSTWZ—also W.A., S.A., Tas., N.S.W., Qd.

Shrub tough, *rigid, never rush-like*, >2 ft. high; ultimate branchlets short (6-10 mm.), *grooved*, minutely *scabrid*, somewhat leaf-like, *curved and spine-tipped*; flowers *brownish*; calyx 4 mm. long (northern Grampians only):

*S. daviesioides* Turcz. in *Bull. Soc. Nat. Moscou* 26: 266 (1853).

*Illust.*: Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 36, col. (1962).

*Vern.*: Prickly Globe-pea. *Distr.*: CDJ—also W.A.

### VIMINARIA Sm. (1805)

*V. juncea* (Schrad. & J. Wendl.) Hoffmannsegg *Verz. PflKult.* 200 (1824).

*Sophora juncea* Schrad. & J. Wendl. *Sert. Hannov.* 9, t. 3 (1795);

*V. denudata* (Vent., ut *Daviesia* sp.) Sm. *Exot. Bot.* 51 (1804).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 28, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 594 (1948), as *V. denudata*; Adam in Ewart, *Handb. For. Trees* t. 92 (1925); Edwards in *Curtis's bot. Mag.* 29: t. 1190, col. (1809), as *V. denudata*; J. C. Loudon, *Arbor. & Frutic. Brit.* 2: 568 fig. 249 & 250 (1838); Garnet, *Wildflowers Wilson's Prom.* fig. 529 (1971).

*Vern.*: Golden Spray. *Distr.*: CDEHJMNPRSTWZ—also W.A., S.A., Tas., N.S.W., Qd.

### DAVIESIA Sm. (1798)

1. Leaves *pungently pointed* and prickly

Leaves *not* pungently pointed

6

2

2. Flowers in *regular umbels* of  $\pm 5$ , their slender pedicels subtended by a *rosette* of ovate bracts; leaves narrow-linear, 2-10" long (tall shrub with acutely triquetrous branches, very localized in E. Gippsland—Mt. Kaye and Wangrabelle):

*D. wyattiana* F. M. Bailey in *Pap. Gdng Assoc. S. Aust.* (1880).

*Illust.*: Bailey, *Qd Flora* 2: t. 13 opp. 348 (1900).

*Vern.*: Long-leaf Bitter-pea. *Distr.*: Z—also N.S.W., Qd.

—Flowers in racemes or irregular clusters, *never umbellate* 3

3. Leaves  $<1"$  long, *ovate* to almost orbicular, usually obtuse and  $\pm$  cordate, *shiny, not reticulate* but often slightly crenulate and sometimes undulate; racemes to 2 cm. long (Gippsland):

*D. buxifolia* Benth. *Flor. aust.* 2: 75 (1864).

*Vern.*: Box-leaf Bitter-pea. *Distr.*: SWZ—also ? W.A., N.S.W., Qd.

—Leaves 1-4" long reticulately veined or very narrow 4

4. Racemes *dense*,  $>1"$  long; floral bracts 2-6 mm. long; leaves ovate to elliptic-lanceolate, usually 2-3" long, *strongly reticulate*, often undulate; flowers yellow-and-brown:

*D. latifolia* R. Br. in Ait. f. *Hort. kew.* ed. 2, 3: 20 (1811).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 400, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 69 (1967); Curtis's *bot. Mag.* 42: t. 1757, col. (1815); Reeves in Stone, *Victoria's Resources* 6<sup>2</sup>: 40 (1964); Sulman, *Aust. Wild Flowers* ser. 2: t. 13 (1913).

*Vern.*: Hop Bitter-pea. *Distr.*: DEJNPRSTVWZ—also Tas., N.S.W., Qd.

—Racemes  $<1"$  long or, if ever more, then *loose* and the floral bracteoles always  $<2$  mm. long 5

5. Leaves on upper parts of plant *much reduced* or sometimes absent, elsewhere up to 3" long, *oblanceolate to linear*, *thick* in texture, often *rigidly erect*, seldom reticulately veined but usually  $\pm$  *wrinkled longitudinally*, never glaucous; flowers always in *short congested racemes* only 1-2 cm. long; pedicels rarely  $>3$  mm. long; pod *sessile*:

*D. virgata* A. Cunn. ex Hook. in Curtis's *bot. Mag.* 59: t. 3196, col. (1832).

*D. corymbosa* sens. Williamson in Ewart *Flor. Vict.* 621 (1931) atque sens. J. M. Black *Flor. S. Aust.* ed. 2: 435 (1948), *non* Sm. (1805).

*Illust.*: Hooker (l.c.); Galbraith, *Wildflowers Vict.* ed. 3: t. 70 (1967), as *D. corymbosa* var. *mimosoides*; Ewart, *Flor. Vict.* fig. 258 (1931), as *D. corymbosa*; Curtis's *bot. Mag.* 45: t. 1957, col. (1818), as *D. mimosoides*.

*Vern.*: Narrow-leaf Bitter-pea. *Distr.*: DHJMNPRSTVWZ—also S.A., N.S.W.

—Leaves *nowhere reduced*, always *widely spreading*, sometimes reticulate and/or glaucous; racemes to 2.5 cm. long or more; pedicels 5 mm. long or more; pod shortly *stipitate*:

**D. mimosoides** R. Br. in Ait. f. *Hort. kew.* ed. 2, 3: 20 (1811).

*Illust.*: Curtis's bot. Mag. 45: t. 1957, col. (1818); Burbidge, *Flor. Aust. Cap. Terr.* fig. 200 (1970).

*Vern.*: Bitter-pea. *Distr.*: SVWZ—also N.S.W., A.C.T., Qd.

[The var. *laxiflora* (J. H. Willis) J. H. Willis in *Muelleria* 1<sup>st</sup>: 123 (1967) is a tall montane shrub to small tree, differing from typical *D. mimosoides* in its broader (to 1"), reticulately veined,  $\pm$  glaucescent, thinner-textured leaves and wholly yellow flowers in loose elongated racemes 2-4" long. It is apparently restricted to Victoria—Grampians, and central-eastern highlands between Lake Mtn. and Mt. Wellington.]

- |   |   |
|---|---|
| 6. Leaves <i>terete</i> or almost so (broom-like western shrubs)  | 8 |
| Leaves with <i>flattened laminae</i>  | 7 |
| 7. Leaves <i>grey-green</i> , flattened <i>vertically</i> and adnate to stem with <i>broad decurrent bases</i> , to 3 cm. long; pod 10-14 mm. long (western Wimmera): |   |

**D. pectinata** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 150 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 596 (1948); Galbraith, *Wildflowers Vict.* ed. 3: t. 71 (1967); Reeves in Stone, *Victoria's Resources* 6<sup>th</sup>: 40 (1964); Smith, *W. Aust. Nat.* 3: 22 (Sept. 1951).

*Vern.*: Thorny Bitter-pea. *Distr.*: C—also W.A., S.A.

—Leaves *bright green*, flattened *horizontally*, *articulate on the branches*, narrow-lanceolate to ovate, <2 cm. long; pod  $\pm$  10 mm. long (widely distributed):

**D. ulicifolia** Andr. *Bot. Repos.* 5: t. 304 (1803).

*D. ulicina* Sm. in *Ann. Bot., Lond.* 1: 506 (1805).

*Illust.*: Andrews (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 592 M & 595 (1948); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 197 (1965), as *D. ulicina* var. *ruscifolia*; Charsley, *Wildflowers Melbourne* t. 8, col. (1867), as *D. ulicina*.

*Vern.*: Gorse Bitter-pea. *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[*D. ruscifolia* A. Cunn. ex Benth. in *Ann. Wien. Mus. Naturg.* 2: 75 (1840) was reduced to a form of *D. ulicina* in Bentham's *Flor. aust.* 2: 81 (1864), then raised to varietal rank in J. M. Black's *Flor. S. Aust.* 296 (1924); but in view of the widely varying leaf shapes within *D. ulicifolia*, this extreme ovate-leaved condition hardly warrants nomenclatural status. Broader-leaved plants from the Mallee are commonly hairier than narrow-leaved montane populations.]

8. Leaves only 2-6 mm. long, stoutly *thorn-like* and *continuous* with branches; flowers *apricot to red*, on pedicels *shorter than calyx*; keel *pointed*, much incurved:

**D. brevifolia** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 200 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 119, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 72 (1967); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 196 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 597 & 592 T (1948).

*Vern.*: Leafless Bitter-pea. *Distr.*: BCDEHJKMNP—also W.A., S.A.

—Leaves 1-3 cm. long, *subulate, articulate* on branchlets; flowers *orange*, on pedicels *as long as calyx*; keel *obtuse*:

**D. genistifolia** A. Cunn. ex Benth. in *Ann. Wien. Mus. Naturg.* 2: 75 (1840).  
*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 104, col. (1968).

*Vern.*: Broom Bitter-pea. *Distr.*: BCMR—also S.A., N.S.W., A.C.T., Qd.

### PULTENÆA Sm. (1793)

1. Most leaves *alternate* 4  
 Most leaves *opposite or in whorls of 3* 2
2. Shrub *erect*,  $\pm$  *glaucous*, 2-6 ft. tall; leaves normally *in threes*, to 2 cm. long, *broadly rhomboid, flat*, with pungent apex; flowers solitary and pedicellate in upper axils, relatively large (8-16 mm. long) and showy, orange-yellow (N.E. highlands):

**P. cunninghamii** (Benth.) H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 35: 99 (1922).

*Spadostyles cunninghamii* Benth. in *Ann. Wien. Mus. Naturg.* 2: 81 (1840).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 386, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 62 (1967); Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922).

*Vern.*: Grey Bush-pea. *Distr.*: RSVZ—also N.S.W., A.C.T., Qd.

[H. B. Williamson, *l.c.* 100 (1922), also published the var. *pubescens*—a small-leaved form, with  $\pm$  pubescent branches and shorter flower-stalks. It extends from the Upper Murray and Mitta Mitta regions (N.E. Vic.) to the Darling Downs in Queensland.]

—Shrubs *procumbent*, with extremely slender  $\pm$  capillary branchlets, *never glaucous*, <2 ft. tall; leaves *linear to narrowly lanceolate*, the margins *incurved* 3

3. Branchlets appressedly *silky*; leaves mostly *in threes*, 4-6 mm. long, oblong-linear, *obtuse*, wholly *glabrous*; flowers pedicellate in upper axils, to 10 mm. long (eastern alpine tracts, notably Mt. Buffalo):

**P. tenella** Benth. *Flor. aust.* 2: 122 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 14 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: RS.

—Branchlets *glabrous*; leaves mostly *opposite*, 10-15 mm. long, linear-lanceolate,  $\pm$  *acute*, glabrous above but *silky beneath*; flowers shortly pedicellate, 1-4 in *terminal heads* (diffuse trailing undershrub of damp places in southern Grampians region):

**P. luehmannii** Maiden in *Vict. Nat.* 22: 100 (1905).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 14 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: DJ—also W.A.



4. Leaf-margins *incurved* or *flat*, but not at all recurved 16  
Leaf-margins always  $\pm$  *recurved* 5
5. Flowers on pedicels *longer* than leaves, *solitary* or *in pairs*, with free linear bracteoles at base of calyx; leaves narrow-linear,  $\pm$  1 cm. long, acuminate and sometimes  $\pm$  pungent (*prostrate, densely matted plant*):

**P. pedunculata** Hook. in *Curtis's bot. Mag.* 55: t. 2859, col. (1828).

*Illust.*: Hooker (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 312, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 64 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 602 (1948); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 14 inter 224 & 225 (1920); Williamson in Ewart, *Flor. Vict.* fig. 236 c (1961)—calyx.

*Vern.*: Matted Bush-pea. *Distr.*: BCDJMNSW—also S.A., Tas., N.S.W.

—Flowers *sessile* or on pedicels *shorter* than leaves, usually in clusters (plants *erect* or, if ever decumbent, then with *open branching*) 6

6. Leaves *never* mucronate, or the apical projection weak and usually pubescent 9

Leaves with midrib produced beyond the apex into a *conspicuous glabrous mucro* (tall shrubs, usually 3-10 ft. high) 7

7. Leaves broadly *cuneate* or *obovate*, *glabrous* or nearly so,  $\pm$  1.5-3 cm. long, the apical mucro *minute*; flowers 8-15 mm. long, in dense terminal heads; bracteoles linear, inserted high up on calyx-tube, but their tips never attaining the height of calyx-lobes:

**P. daphnoides** J. Wendl. *Bot. Beobacht.* 49 (1798).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 601 (1948); Galbraith, *Wildflowers Vict.* ed. 3: t. 65 (1967); Edwards in *Curtis's bot. Mag.* 34: t. 1394, col. (1811); Andrews, *Bot. Repos.* t. 98 (1800); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920)—2 leaf forms; Garnet, *Wildflowers Wilson's Prom.* fig. 508 (1971).

*Vern.*: Large-leaf Bush-pea. *Distr.*: DHJKNPRSTVWZ—also S.A., Tas., N.S.W., Qd, N.Z.

[On Mts. Ida and Korong (cent.-western Vic.) is a rupestral form having narrow, hardly cuneate leaves that are not at all recurved at margins. In aspect it strongly recalls *P. platyphylla* Wakefield (*q.v.*) from Mt. Tarrngower, of which *P. daphnoides* var. *parviflora* Williamson is a synonym, but differs in the  $\pm$  *pungent* leaf-tip and the *short* linear bracteoles seated *high up* on calyx-tube.]

—Leaves *elliptical* or *narrow-lanceolate*, the under-surfaces *pubescent* and apical point *needle-like* 8

8. Stems and under-sides of leaves  $\pm$  *villose*; leaf-apex  $\pm$  *obtuse*, contracted into a *slender weak recurved* point; calyx-lobes *longer* than tube, *needle-like*; bracts *persistent* 3-8 mm long (N.E. highlands and far E. Gippsland):

**P. polifolia** A. Cunn. in *Field Geogr. Mem. N.S.W.* 346 (1825).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920), incl. var. *mucronata*.

*Vern.*: Bush-pea. *Distr.*: RVZ—also N.S.W., Qd.

[Victorian populations are all referable to the var. *mucronata* (F. Muell., *ut sp.*) H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 32: 214 (1920), differing from the typical Port Jackson form in having shorter, broader, more mucronate leaves, more villose branchlets, and less keeled bracteoles set lower on the calyx-tube.]

—Stems and leaves with *sparse appressed vestiture*; leaf-apex *straight, acute*, with *rigidly pungent* point; calyx-lobes *shorter* than tube, *not mucronate*; bracts *deciduous*, to 5 mm. long (Grampians and E. Gippsland):

**P. benthamii** F. Muell. in *Trans. phil. Soc. Vict.* 1: 38 (1855).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920).

*Vern.*: Bush-pea. *Distr.*: DJJ—also N.S.W.

9. Leaves *ovate or lanceolate* <5 mm. long (rarely more), the under-surface *very concave*, greyish, with the midrib *hardly apparent*; branches often wiry and sprawling; flowers in loose terminal clusters of 3-8, the pedicels finally exceeding the bracts; bracteoles inserted on calyx-tube, very small (about  $\frac{1}{2}$  length of lobes):

**P. gunnii** Benth. in *Ann. Wien. Mus. Naturg.* 2: 82 (1840).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 57, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 66 (1967); Hooker f., *Flor. Tasm.* 1: t. 13, col. (1855); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920).

*Vern.*: Golden Bush-pea. *Distr.*: JNPRSTV—also Tas.

—Leaves oblanceolate, obcordate, oblong or  $\pm$  linear, usually >5 mm. long, the midrib *conspicuous* on the under-surface 10

10. Upper surfaces of foliage *scabrous and hispid*, the under-sides villose; leaves *cuneate* or obcordate, usually  $\pm$  *bilobed* and with short recurved apex; flowers in loose clusters of 2-5, the short pedicels finally exceeding the bracts; bracteoles narrow-lanceolate, almost as long as calyx (shrub 3-6 ft. tall):

**P. scabra** R. Br. in *Ait. f. Hort. kew.* ed. 2, 3: 18 (1811).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 63 (1967); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 14 inter 224 & 225 (1920); Garnet, *Wildflowers Wilson's Prom.* fig. 517 (1971).

*Vern.*: Rough Bush-pea. *Distr.*: CDEJNPSTWZ—also S.A., N.S.W.

[Forms with prominently bilobed leaves have been grouped under the var. *biloba* (R. Br., *ut sp.*) Benth. *Flor. aust.* 2: 117 (1864) and are frequent throughout Victoria. Another population, in the Grampians, has obovate leaves with *no apical point* and much more strongly recurved margins; this has been designated as var. *montana* (Lindl., *ut sp.*) Benth. *Flor. aust.* 2: 117 (1864). The Ringwood-Heathmont area has produced still another form that is much less hairy, with obovate to elliptic leaves lacking the notched apex. As remarked by Mrs. Joy Thompson in *Contr. N.S.W. Herb. Flora Series n.* 101: 60 (1961), it is as yet premature to set out a satisfactory classification, at the subspecific level, for this highly polymorphic species.]

—Upper surfaces of mature leaves *glabrous and smooth* (except sometimes about the midrib) 11

11. Leaves *wholly glabrous*, linear to oblong or even obovate, *truncate* at the apex and *often emarginate*; flowers 3-5 in small terminal bracteate heads; bracts deciduous; bracteoles narrow-oblong to lanceolate, inserted high up on calyx-tube and slightly exceeding the lobes (erect shrub 2-3 ft., with *angular pubescent* branches):

**P. retusa** Sm. in *Ann. Bot., Lond.* 1: 502 (1805).

*Illust.*: Curtis's bot. Mag. 46: t. 2081, col. (1819); Williamson, *Proc. roy. Soc. Vict. new ser.* 32: t. 13 opp. 224 (1920).

*Vern.*: Bush-pea. *Distr.*: DJMPTVWZ—also N.S.W., Qd.

—Leaves often *pubescent on under-surfaces*, neither truncate nor emarginate, the apex  $\pm$  pointed but often recurved so that the leaf appears to be bilobed 12

12. Stems *rigid, erect*, 1-3 ft. tall; under-surfaces of leaves *glabrous or only sparsely pubescent*; flowers few in each head 14

Stems *wiry, weak and straggling*; under-surfaces of leaves densely covered with *appressed silky hairs* (at least when young); flowers often numerous in each dense head 13

13. Leaves *obovate to oblanceolate*, <1 cm. long, usually *blunt*; floral bracts *orbicular, densely pubescent*, dark brown; bracteoles with *long silky hairs* (subalpine, in farther eastern highlands):

**P. capitellata** Sieber ex DC. *Prodr.* 2: 112 (1825).

*Illust.*: Williamson, *Proc. roy. Soc. Vict. new ser.* 32: t. 13 opp. 224 (1920).

*Vern.*: Bush-pea. *Distr.*: VZ—also N.S.W., A.C.T.

—Leaves *linear to narrowly oblanceolate* (rarely broad), 1-3 cm. long, *acute*; floral bracts *narrow-lanceolate*, almost *glabrous*, pale and papery; bracteoles *pubescent only along keel* (lowland heaths):

**P. paleacea** Willd. *Spec. Plant.* 2: 506 (1799).

*Illust.*: Williamson, *Proc. roy. Soc. Vict. new ser.* 32: t. 15 inter 224 & 225 (1920); Loddiges, *Bot. Cabinet* 3: t. 291 (1818); Garnet, *Wildflowers Wilson's Prom.* fig. 514 (1971).

*Vern.*: Chaffy Bush-pea. *Distr.*: NTVWZ—also N.S.W., Qd.

[A frequent diminutive form is the var. *sericea* Benth. *Flor. aust.* 2: 116 (1864), having conspicuously long, white-silky, scarious stipules and bracts, whereas the var. *williamsonii* (Maiden, *ut sp.*) H. B. Williamson in *Proc. roy. Soc. Vict. new ser.* 32: 220 (1920), from creeks near Strathbogie, is more robust, with relatively broader leaves and *much larger bracteoles* that are free from and almost enveloping the calyx.]

14. Inner floral bracts *narrowly ovate*, almost or quite *glabrous, deciduous*; leaves glabrous above, sometimes  $\pm$  pubescent beneath, 6-10 mm. long, oblanceolate to *broadly oblong or elliptic*, appearing blunt but with a *recurved callous point*; flowers shortly pedicellate, finally in

rather *loose clusters*; bracteoles oblong-linear, concave, attached to middle of calyx-tube and often exceeding the lobes, bright brown, papery, almost glabrous:

*P. stricta* Sims in *Curtis's bot. Mag.* 38: t. 1588, col. (1813).

*Illust.*: Sims (*l.c.*); Williamson in Ewart, *Flor. Vict.* fig. 236 D (1931)—calyx; Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920); Garnet, *Wildflowers Wilson's Prom.* fig. 518 (1971).

*Vern.*: Bush-pea. *Distr.* DEHJKNPRTWZ—also S.A., Tas., N.S.W.

—Inner floral bracts *trifid* with a slender *pubescent central lobe, persistent*; leaves always hairy beneath; flowers in *tight clusters* 15

15. Leaves *narrow-oblong, sparsely villose* beneath, 6-12 × 2-4 mm.; bracts ± *orbicular*; bracteoles narrow-lanceolate to ligulate, inserted *near middle* of calyx-tube (low, shortly villose shrub of E. Gippsland):

*P. linophylla* Schrad. *Sert. Hannov.* 29 (1795).

*Vern.*: Bush-pea. *Distr.*: TWZ—also N.S.W.

[The Victorian population has been described as a distinct species, *P. amana* Sieber ex N. A. Wakefield in *Vict. Nat.* 73: 164 (1957), differing from *P. linophylla* in its *shorter broader* leaves—they are 10-25 × 1-3 mm. in the typical form of the latter taxon—but Mrs. Joy Thompson does not accept any segregation and synonymizes *P. amana* in her treatment of *Pultenaea* for the *Contr. N.S.W. Herb. Flora Series* n. 101: 56 (1961).]

—Leaves *oblong or narrowly cuneate*, usually pale beneath with an *appressed vestiture*, 6-12 × 2-3 mm.; bracts *cordiform* with very narrow mid-lobe; bracteoles broad-linear, inserted *toward base* of calyx-tube (rare shrub, 2-3 ft., of southern Grampians):

*P. maidenii* F. M. Reader in *Vict. Nat.* 22: 158 (1906).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 13 opp. 224 (1920).

*Vern.*: Bush-pea. *Distr.*: DJ.

16. Flowers *axillary* or, if ever terminal, then either mostly >2 together or not immersed in imbricate bracts 19  
Flowers *terminal, solitary* (rarely 2 together); calyx-tube *immersed in broad, tightly imbricate bracts*; bracteoles large, scarious, ovate-elliptic, almost or quite as long as calyx 17
17. Leaves ± 10 mm. long, narrow-lanceolate, *acute and ± pungent*, the under-side sparsely covered with long appressed hairs; flowers always *solitary*, terminating main branchlets; bracts shortly ciliate (tall shrub of eastern highlands, with smaller variant in western hills):

*P. muelleri* Benth. *Flor. aust.* 2: 138 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 6 opp. 148 (1921); Willis, *Vict. Nat.* 57: 99 fig. 6-8 (1940).

*Vern.*: Mueller's Bush-pea. *Distr.*: JKNSTVW.

[The var. *reflexifolia* J. H. Willis in *Vict. Nat.* 57: 98 (1940) is distinguished by its smaller stature (only up to 1 ft. high) and much more acuminate, almost setiform stipules and calyx-lobes; but the most noticeable peculiarity is in the predominantly *reflexed leaves* which impart a curiously withered appearance. This variant would seem to be restricted to gravelly hills in western Victoria (Daylesford & Bullarook Forests, Skipton, Apollo Bay.)

—Leaves mostly 4-8 mm. long, *obtuse*; flowers either numerous and each terminating a short lateral branchlet or 1-2 together within pubescent bracts (shrubs <3 ft. high) 18

18. Leaves minutely *hispid*; flowers 1 or 2 together,  $\pm$  terminal but the branchlets *proliferous* so that the fruit appears to be lateral; bracts very broad, *pale brown*, with *faint* midrib; calyx-lobes *short*, ovate-deltoid (erect shrub 2-3 ft. high, in near-coastal tracts):

*P. prolifera* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 35: 102 (1922).

*Illust.*: Williamson, *l.c.*: t. 7 opp. 106 (1922).

*Vern.*: Bush-pea. *Distr.*: EHKT.

—Leaves *silky or glabrous*; flowers solitary, *quite terminal*; bracts very broad *dark brown*, without apparent midrib; calyx-lobes lanceolate (small spreading shrub, <2 ft. high, of Mallee and inland areas):

*P. prostrata* Benth. ex Hook. f. *Flor. Tasm.* 1: 89 (1856).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 6 opp. 148 (1921).

*Vern.*: Bush-pea. *Distr.*: BCDEHJNR—also S.A., Tas., N.S.W.

—As for the last, but bracts *pale brown* and keeled with a *prominent midrib*, calyx-lobes *acuminate* and much longer than tube, and habit *procumbent* (usually coastal, but an almost glabrous form in Mallee):

*P. tenuifolia* R. Br. in *Curtis's bot. Mag.* 46: t. 2086, col. (1819).

*Illust.*: Brown (*l.c.*); Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921); Loddiges, *Bot. Cabinet* 11: t. 1057 (1825).

*Vern.*: Bush-pea. *Distr.*: BCDEJKNPT—also W.A., S.A., Tas.

[The var. *glabra* Benth. *Flor. aust.* 2: 140 (1864) seems to differ only in its more robust habit and virtually hairless leaves; it frequents the more southerly tracts of Mallee.]

19. Leaves *not pungent*, either  $\pm$  obtuse or terminated by a fragile bristle-like point (often deciduous with age) 28

Leaves terminated by a *rigid pungent point*, or broadly lanceolate to ovate and contracting into an *acute callous point* 20

20. Flowers 3-6 in *umbel-like clusters* terminating the branchlets, their pedicels 4-8 mm. long; leaves  $\pm$  orbicular, 2-3 mm. diam.; bracteoles orbicular, viscid,  $\pm$  2 mm. long,  $\frac{1}{2}$  the length of the glabrous calyx (rather tall shrub, endemic at Mt. Byron in Black Range):

*P. patellifolia* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 40: 60 (1928).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 96, col. (1968); Williamson, *Proc. roy. Soc. Vict.* new ser. 40: 60 fig. 1 n. 1 (1928); Williamson in Ewart, *Flor. Vict.* fig. 236 E (1931)—calyx.

*Vern.*: Mt. Byron Bush-pea. *Distr.*: CD.

—Flowers *sessile* or on pedicels shorter than or barely exceeding the leaves 21

21. Leaves with 5 prominent longitudinal ribs on the under-surface, 5-10 mm. long, broadly ovate-lanceolate,  $\pm$  recurved, glabrous; flowers sessile in dense terminal heads; standard hardly exceeding the subulate calyx-lobes; bracts and bracteoles ovate-acuminate, ciliate, almost as long as calyx (endemic in Grampians):

*P. costata* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 33: 140 (1921).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Bush-pea. *Distr.*: DJ.

—Leaves without 5 prominent ribs, or the veins digitate from base 22

22. Leaf-blades lanceolate or ovate, the base erect and apex recurved outwards; lateral venation conspicuous on under-surfaces 26

Leaf-blades straight or nearly so, 3 to several times as long as wide; lateral veins seldom apparent on under-surfaces 23

23. Flowers subsessile or on pedicels <3 mm. long; bracteoles oblong to linear-lanceolate, seldom resinous 25

Flowers on conspicuous hairy pedicels 3-5 mm. long; bracteoles large,  $\pm$  orbicular, highly resinous and shining 24

24. Leaves oval-elliptic, manifestly flattened, 4-7 mm. long; flowers in terminal clusters of 3-12, forming umbel-like heads; bracteoles  $>\frac{1}{2}$  the length of calyx (granite hills of N.E.):

*P. vrolandii* Maiden in *Vict. Nat.* 22: 98 (1905).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Bush-pea. *Distr.*: RV—also N.S.W.

—Leaves apparently terete, 7-10 mm. long, perpendicular to stem; flowers 2-4 together at ends of branchlets; bracteoles  $<\frac{1}{2}$  the length of calyx (endemic in northern Grampians):

*P. williamsoniana* J. H. Willis in *Muelleria* 1<sup>3</sup>: 125 (1967).

*P. angustifolia* H. B. Williamson var. *viscosa* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 40: 58 (1928).

*Vern.*: Bush-pea. *Distr.*: C.

25. Leaves with upper-surfaces involute from margins to almost flat,  $\pm$  1-2 cm. long, their petioles erect and appressed to stem; flowers pedicellate, axillary or in loose terminal clusters; calyx-lobes shortly pointed; bracts trifid; bracteoles lanceolate, hardly exceeding the calyx-tube, often much shorter; pods  $\pm$  8 mm. long (mountain regions):

*P. juniperina* Labill. *Nov. Holl. Plant. Specim. 1*: 102, t. 130 (1806).

*Illust.*: Labillardière (*l.c.*); Galbraith, *Wildflowers Vict.* ed. 3: t. 67 (1967); Curtis, *Student's Flor. Tasm. 1*: fig. 37 (1956); Williamson, *Proc. roy. Soc. Vict. new ser. 33*: t. 6 opp. 148 (1921); Curtis, *Proc. roy. Soc. Tasm.* for 1943: t. 6 opp. 198, fig. 1-4 & 6 (1944); Garnet, *Wildflowers Wilson's Prom.* fig. 512 (1971).

*Vern.*: Prickly Bush-pea. *Distr.*: DJPRSTVW—also Tas., N.S.W., A.C.T.

[The var. *planifolia* H. B. Williamson in *Proc. roy. Soc. Vict. new ser. 33*: 138 (1921) has consistently longer leaves (2-3 cm.) that are only slightly incurved at the margins or *quite flat*. It is by far the commoner form of the species in Victoria, occurring widely as a prickly bush 5-10 ft. high; the lower, much narrower-leaved typical form is apparently confined in this State to the Grampians.]

—As for the last, but petioles *not* appressed, flowers in dense *terminal heads*, bracteoles *much exceeding calyx-tube* and the *wide leaf-apex* sharply contracting into a firm mucro (tall shrub of rocky places, with leaves *paler* beneath):

*P. daphnoides* J. Wendl. [See p. 260.]

—Leaves *linear-subulate*,  $\pm$  *trigonous*, *crowded*,  $\pm$  1 cm. long; flowers *subsessile*, crowded into short leafy terminal heads; calyx-lobes with rigid *subulate points*; bracts *stipular*; bracteoles oblong and *acuminately pointed*, almost *as long as calyx* (northern Grampians):

*P. acerosa* R. Br. ex Benth. *Flor. aust. 2*: 131 (1864).

*Vern.*: Bush-pea. *Distr.*: DJ—also S.A.

[The Grampians population differs from the typical, South Australian form in having longer ( $\pm$  1 cm.), broader and less terete leaves, and *villose* calyx-lobes.]

26. Bracteoles inserted *high up* on the calyx-tube, *leaf-like* and stipulate; leaves 5-10 mm. long, usually  $\pm$  *villose* on the margins (at least); flowers crowded in the upper axils, 7-9 mm. long (N.E. & far E. highlands):

*P. procumbens* A. Cunn. in *Field Geogr. Mem. N.S.W.* 346 (1825).

*P. styphelioides* A. Cunn. ex G. Don *Gen. Syst. 2*: 124 (1832), ut "*P. styphyleoides*".

*Illust.*: Williamson in Ewart, *Flor. Vict.* fig. 236 A-B (1931)—calyx, as *P. styphelioides*; Williamson, *Proc. roy. Soc. Vict. new ser. 37*: t. 16 opp. 128 (1925), as *P. styphelioides*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 206 (1970).

*Vern.*: Bush-pea. *Distr.*: RSV—also N.S.W., A.C.T.

[In the Chiltern and Beechworth hills occurs a form with relatively broader (3-4 mm.) leaves which lack the pungent apex. This was published by H. B. Williamson in Ewart's *Flor. Vict.* 630 (1931) as *P. styphelioides* var. *mutica*. As noted previously by Williamson, in *Proc. roy. Soc. Vict. new ser. 40*: 59 (1928), this population shows an interesting transition towards *P. foliolosa* A. Cunn. ex Benth. (*q.v.* p. 271) which is present in the same district.]

—Bracteoles broad, inserted *at the base* of calyx-tube and concealing it

27. Leaves *glabrous*, *broadly ovate*,  $\pm$  2-4 mm. long; stipules *broad, pale*,

imbricate; flowers *sessile*, crowded into leafy heads along the branches (Big Desert & far N.W. Mallee):

*P. densifolia* F. Muell. in *Trans. Vict. Inst.* 119 (1855).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 208 (1965); Williamson *Proc. roy. Soc. Vict.* new ser. 32: t. 15 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: BC—also S.A.

—Leaves *hairy beneath*, oval-elliptic, 4-7 mm. long; stipules *dark*, becoming *setaceous*; flowers manifestly *pedicellate*, in loose terminal *umbels*; floral bracts and orbicular bracteoles *resinous and shining* (N.E. granite hills):

*P. vrolandii* Maiden. [See p. 265.]

28. Flowers *axillary* (but often congested, forming dense terminal leafy racemes or spikes, the axes of which soon grow out into leafy shoots) 37

Flowers in a definite *terminal head or cluster*, the axis *not* growing out into a leafy shoot (at least until long after flowering-time) 29

29. Leaves with *appressed hairs* on the under-surfaces, obovate to narrowly cuneate, the apex truncate and often  $\pm$  bilobed with a *recurved point*; flowers subsessile, the bracts falling early; calyx silky-pubescent, with small lanceolate bracteoles *near summit* of tube (low wiry shrub, often occurring on western goldfields):

*P. largiflorens* F. Muell. ex Benth. *Flor. aust.* 2: 134 (1864).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 334, col. (1968); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 15 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: DHJMN RW—also S.A., N.S.W.

—Leaves never simultaneously hairy beneath *and* with recurved apices ( $\pm$  *straight-tipped*) 30

30. Stem, foliage and calyx all quite *glabrous*; leaves *narrowly cuncate*, obtuse, almost flat,  $\pm$  1 cm. long; flowers yellow, stalked in terminal *umbels*; bracts *minute* (tall shrub of far E. Gippsland):

*P. altissima* F. Muell. ex Benth. *Flor. aust.* 2: 123 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 14 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: Z—also N.S.W.

—Stem or leaves or calyx *pubescent*; flowers subtended (at least before anthesis) by *conspicuous bracts* or by leaves with enlarged stipules 31

31. Flowers wholly *pink or purplish*, sessile within the terminal foliage; leaves *terete* (but channelled above), blunt, dense, glabrous but also *tuberculate* (erect shrub to 3 ft., endemic in Grampians):

*P. subalpina* (F. Muell.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 643 (1917).

*Burtonia subalpina* F. Muell. in *Trans. phil. Soc. Vict.* 1: 39 (1855).



*Illust.*: Curtis's bot. Mag. 113: t. 6941, col. (1887), as *P. rosea*; Audas, *One of Nature's Wonderlands* 92 (1925); Mueller, *Key Syst. Vict. Plants* fig. 46 (1886), as *P. rosea*; Mueller, *Plants indig. Colon. Vict.* suppl. t. 13 (1864/5), as *P. rosea*.  
*Vern.*: Rosy Bush-pea. *Distr.*: DJ.

—Flowers yellowish (at least in part); leaves never both glabrous and tuberculate 32

32. Leaves  $\pm$  involute at margins (often terete), very narrowly elliptic to linear, subacute, usually  $<1.5$  mm. wide; stipules reddish-brown and conspicuous or, if ever minute, the branchlets neither angular nor glabrous and bracts numerous, conspicuous, investing the flower-head 34

Leaves almost or quite flat, oblong-elliptic, obtuse,  $>1.5$  mm. wide, smooth; stipules minute, inconspicuous (sometimes absent); branchlets angular or  $\pm$  glabrous; floral bracts small, inconspicuous 33

33. Branchlets very angular, minutely hairy; leaves 1-2 cm. long, 3-6 mm. wide, with rounded and indented apices; bracteoles narrow, exceeding the calyx (hillside plant, the styles not hooked):

*P. platyphylla* N. A. Wakefield in *Vict. Nat.* 73: 164 (1957).

*P. daphnoides* J. Wendl. var. *parviflora* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 32: 212 (1920).

*Vern.*: Bush-pea. *Distr.*: DJMRV—also N.S.W. (Temora district).

—Branchlets hardly angular, almost glabrous, yellowish; leaves to 1 cm. long, 1.5-2 mm. wide, never indented; bracteoles not reaching to half the length of calyx (very slender swamp plant, with short styles hooked near their apices):

*P. subumbellata* Hook. in Curtis's bot. Mag. 60: t. 3254, col. (1833).

*Illust.*: Hooker (l.c.); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 15 inter 224 & 225 (1920).

*Vern.*: Bush-pea. *Distr.*: DEJKNPRSTVWZ—also Tas., N.S.W.

—As for the last but a dryland plant with truncate or emarginate leaf-tips, pubescent branchlets, bracteoles slightly exceeding the calyx and styles never hooked:

*P. retusa* Sm. [See p. 262]

34. Bracteoles large, broad, glabrous, boat-shaped, as long as calyx; leaves scattered, 1-2 cm. long, 1-2 mm. wide, with involute margins but not terete; flowers shortly stalked, in bracteate heads (rare East Gippsland shrub 3-5 ft. high):

*P. viscosa* R. Br. ex Benth. *Flor. aust.* 2: 127 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922).

*Vern.*: Bush-pea. *Distr.*: W (Bulumwaal)—also N.S.W.

—Bracteoles much shorter than calyx or, if as long, then leaves terete 35

35. Leaves straight or  $\pm$  down-curved at tip, mostly  $<1$  cm. long, all (except

on very young shoots) *glabrous*, never entirely terete; stipules minute, *inconspicuous* (low wiry shrub of wet peaty ground):

*P. dentata* Labill. *Nov. Holl. Plant. Specim. 1*: 103, t. 131 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 606 (1948); Williamson, *Proc. roy. Soc. Vict.* new ser. 32: t. 15 inter 224 & 225 (1920); Garnet, *Wildflowers Wilson's Prom.* fig. 509 (1971).

*Vern.*: Bush-pea. *Distr.*: DJKNPTVW—also S.A, Tas., N.S.W., Qd.

—Leaves often gently *up-curved*, usually 1 cm. long or more, at least those around flower-heads (and often all) *hairy*, usually *quite terete*; stipules slender, *conspicuous*, persistent. 36

36. Shrub 4-8 ft. high, erect; floral bracts *few*,  $\pm$  *truncate*, slightly or not exceeding the pedicels; bracteoles broad, closely appressed, much shorter than calyx; standard > twice the length of calyx:

*P. mollis* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 258 (1838).

*P. angustifolia* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 40: 57 (1928).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 115, col. (1968); Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922).

*Vern.*: Bush-pea. *Distr.*: CDEJNPRSTWZ.

[*P. mollis* is a variable species of which the localized type form (Mts. Abrupt and Sturgeon at the southern extremity of the Grampians) has coarse leaves to 1.5 mm. wide, with soft spreading hairs and upper surfaces not always concealed by the incurved margins, its flowers being almost or quite sessile in very dense heads.

A population (type from Mt. Macedon), having finer, soft, always terete leaves and the flowers shortly pedicellate, was given specific rank as *P. angustifolia* by H. B. Williamson (*l.c.*). It is scattered throughout hilly parts of southern Victoria—from the Grampians to near Orbost—and is here considered conspecific with *P. mollis*; intermediate states occur near Portland.]

—Shrub typically <3 ft. high and usually  $\pm$  procumbent (except on Mt. Buffalo); stipules *not* conspicuous on old branches; floral bracts *numerous*, *bifid*, with  $\pm$  mucronate points, far longer than pedicels and very conspicuous; bracteoles lanceolate, *as long as calyx lobes*; standard nearly twice as long as calyx; pod longer than calyx:

*P. hibernioides* Hook. f. *Flor. Tasm. 1*: 89 (1856).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922); Garnet, *Wildflowers Wilson's Prom.* fig. 511 (1971).

*Vern.*: Bush-pea. *Distr.*: DJRT—also Tas.

[Bentham in *Flor. aust.* 2: 128 (1864) published the variety *conferta* on the basis of a collection from "Australia Felix", having smaller bracts and bracteoles; no material so determined is in Melbourne Herbarium, and the recognition of such a variant is open to question. The variety *prostrata* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 40: 58 (1928) is redundant, being referable to the typical prostrate condition of *P. hibernioides* from near Georgetown, Tas.]

—As for the last, but paler stipules very long, connate, overlapping and *persisting even on older branches*, floral bracts with large broad stipules (the whole  $\pm$  *truncate*), bracteoles villose, and standard *hardly exceeding calyx which encloses the pod* (rare shrub of Little Desert, having rigid,  $\pm$  mucronate leaves 6-10 mm. long):

*P. vestita* R. Br. in Ait. f. *Hort. kew.* ed. 2, 3: 19 (1811).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 6 opp. 148 (1921).

*Vern.*: Bush-pea. *Distr.*: C (Catiabrim Parish)—also W.A., S.A.

37. Stems, foliage and calyx all *glabrous*; leaves  $\pm$  erect, broad-linear to narrowly oblanceolate,  $\pm$  1 cm. long; flowers clear yellow, in congested leafy heads at or near ends of branches, the floral leaves with enlarged stipules (swampy tracts in central Victoria between Daylesford and Nar-Nar-Goon):

*P. weindorferi* F. M. Reader in *Vict. Nat.* 22: 51 (1905).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Swamp Bush-pea. *Distr.*: NT.

—Upper stems or the calyx *pubescent*

38

38. Flowers solitary or in pairs at the ends of very short branchlets, *partly immersed* in the enlarged stipules of floral leaves; bracteoles oblong, brown, scarious, glabrous, slightly shorter than calyx (small procumbent shrub with terete, fasciculate leaves 4-6 mm. long):

*P. tenuifolia* R. Br. [See p. 264.]

—Flowers in clusters of  $>2$  or not immersed within stipules or bracts

39

39. Leaves  $\pm$  *flat* or with incurved margins, or, if ever appearing terete, then with apices  $\pm$  *recurved* (except in *P. d'altonii*)

41

Leaves apparently *terete* and channelled above, the apex *not* at all recurved (alpine or coastal plants)

40

40. Small *weak alpine* shrub with silvery pubescence; leaves 4-8 mm. long,  $\pm$  0.5 mm. thick, with *slender* apical point; flowers axillary, shortly *pedicellate*:

*P. fasciculata* Benth. in *Ann. Wien. Mus. Naturg.* 2: 82 (1840).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Bush-pea. *Distr.*: RSVWZ—also Tas., N. W., A.C.T.

—Large *rigid coastal* shrub, densely pubescent and grey-brownish; leaves  $\pm$  10 mm. long, stout, bluntish; flowers *sessile* in upper axils:

*P. canaliculata* F. Muell. in *Trans. Vict. Inst.* 119 (1855).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922).

*Vern.*: Coast Bush-pea. *Distr.*: EKPT—also S.A.

41. Flowers *sessile*, *crowded* at the ends of branchlets within stipules of the floral leaves, reddish-brown and orange; bracteoles large, leaf-like

and stipulate; leaves *terete*, to 1 cm. long, *hispid* or *villose*, not manifestly recurved at apices; stipules dark, *prominent*, subulate and finally *recurved* (wiry, endemic western shrub to 3 ft. high or more):

*P. d'altonii* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 35: 102 (1922).

*Illust.*: Williamson, *l.c.*: t. 7 opp. 106 (1922).

*Vern.*: Bush-pea. *Distr.*: CDKN.

—Flowers *scattered* or in loose clusters, with pedicels long or short but normally quite discernible, or, if ever appearing sessile among terete foliage, then leaves *never* hairy, usually *recurved* at apices and their stipules neither prominent nor recurved 42

42. Flowers *sessile* or subtended by enveloping bracts or conspicuous enlarged stipules 44

Flowers *pedicellate*, axillary; stipules quite *inconspicuous* 43

43. Leaves *linear* to  $\pm$  *terete*, spreading widely from stem, 3-6 mm. long, bristly-hairy to almost glabrous; stems and calyx beset with short, white, rigid hairs; bracteoles *ovate*, not  $> \frac{1}{2}$  the length of calyx which is 3-4 mm. long (tall, resinous and highly aromatic shrub; scattered in W. Victoria, e.g. Grampians, near Daylesford and Steiglitz):

*P. graveolens* R. Tate in *Trans. roy. Soc. S. Aust.* 7: 68 (1885).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 603 (1948); Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Scented Bush-pea. *Distr.*: DJMN—also S.A.

—Leaves *ovate-elliptic* to  $\pm$  orbicular, <4 mm. long, concave above or the margins involute; calyx 4-5 mm. long; bracteoles *leaf-like*, 2-5 mm. long (sprawling, rusty-villous, non-aromatic shrub of N.E.):

*P. foliolosa* A. Cunn. ex Benth. in *Ann. Wien. Mus. Naturg.* 2: 83 (1840).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 35: t. 7 opp. 106 (1922); Williamson, *ibid.* new ser. 40: 60 fig. 1-2 (1928).

*Vern.*: Bush-pea. *Distr.*: RSVW—also N.S.W., Qd.

—Leaves *rhomboid* to *lanceolate*, 5-10 mm. long, incurved at margins and *recurved* at apex; calyx 5-7 mm. long; bracteoles 3-lobed, 4-5 mm. long (procumbent shrub of N.E.):

*P. procumbens* A. Cunn. [See p. 266.]

44. Flowers axillary and *scattered* or in loose terminal clusters; leaves oblong, linear or subterete 46

Flowers crowded into congested leafy spikes towards the ends of branchlets, orange-yellow; leaves *oblanceolate* to *elliptic*, concave, the stipules of floral leaves  $\pm$  enlarged 45

45. Leaves silky-hairy or glabrous on lower convex surface, but not tuberculate; bracteoles *linear-subulate*, usually ciliate, often stipulate (widespread, usually  $\pm$  erect shrub to 1 ft. high):

**P. humilis** Benth. ex Hook. f. *Flor. Tasm.* 1: 91 (1856).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 5, col. (1968); Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 6 opp. 148 (1921).

*Vern.*: Bush-pea. *Distr.*: CDEJMNPRUVW—also Tas., ? N.S.W.

[Typical Tasmanian *P. humilis* has the calyces and under-sides of the leaves *silky-hairy*. In *Proc. roy. Soc. Vict.* new ser. 33: 133 (1921), H. B. Williamson erected the var. *glabrescens* for Victorian populations having *quite glabrous* foliage and calyces. Since the proposed taxon ranges widely over much of the State, mingling with more typical forms, and as there is little correlation between degree of development of hair and leaf-shape, it is doubtful whether var. *glabrescens* is worthy of any recognition.]

—Leaves minutely *tuberculate* on convex under-surfaces; bracteoles *oblong to obovate*, 3-lobed at apex, pubescent on central dorsal area (diffuse procumbent shrub of N.E. Gippsland, above 2000 ft.):

**P. subspicata** Benth. *Flor. aust.* 2: 137 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 6 opp. 148 (1921).

*Vern.*: Bush-pea. *Distr.*: W (Wulgulmerang)—also N.S.W., A.C.T.

46. Shrub  $\pm$  *procumbent*; leaves *glabrous and shining* or minutely tuberculate, often 1-2 cm. long, usually *recurved* at apices; flowers subsessile, always *terminal*, at first enclosed within relatively large imbricate bracts which fall away early; bracteoles *always* linear and leaf-like (lowlands of W. and N.E. Victoria):

**P. laxiflora** Benth. *Flor. aust.* 2: 133 (1864).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921).

*Vern.*: Bush-pea. *Distr.*: CDHJMNR—also S.A., A.C.T.

[Victorian populations belong chiefly to the var. *pilosa* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 33: 144 (1921), distinguished by its larger size, more erect habit and more crowded flowers that appear subsessile (their very short pedicels hardly lengthening). This plant is distributed over the whole northern foothill country of W. Victoria, from the Hume Highway to the Little Desert.]

—Shrub usually 3-4 ft. high, much-branched, with *drooping*  $\pm$  *rusty branchlets*; leaves usually *hirsute or scabrous*, obtuse, <1 cm. long; flowers axillary and scattered or *terminal* and few together, often subtended by persistent, somewhat enlarged and dark-coloured bract-like stipules; bracteoles *highly variable*, often green and stipulate and as long as calyx, sometimes oval, brown and viscid:

**P. hispidula** R. Br. ex Benth. *Flor. aust.* 2: 133 (1864).

*P. recurvifolia* (Benth., ut *P. tenuifolia* var.) H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 33: 146 (1921);

*P. readeriana* H. B. Williamson *l.c.* 35: 104 (1922);

*P. pubescens* H. B. Williamson *l.c.* 37: 125 (1925).

*Illust.*: Williamson, *Proc. roy. Soc. Vict.* new ser. 33: t. 7 inter 148 & 149 (1921), as *P. hispidula* & *P. recurvifolia*.

*Vern.*: Rusty Bush-pea. *Distr.*: CDEJKNPSTWZ—also S.A., N.S.W.

[After critical appraisal and much thought, it has been decided not to recognize Williamson's three species that are synonymized above under *P. hispidula*. These were all upheld in Ewart's *Flor. Vict.* 631, 632 & 638 (1931), distinguished by the disposition of inflorescence, length of calyx and shape of bracteole—all variable characters showing little correlation. A wider concept of *P. hispidula* (type from George's River, N.S.W.), to include these variants, seems desirable at present.

Also in Ewart's *Flor. Vict.* 630 (1931), Williamson describes as doubtfully Victorian *P. villosa* Willd. *Spec. Plant.* 2: 507 (1799). No undoubted spontaneous examples are known for the State, but several older collections determined as such proved to be misidentified *P. hispidula*. *P. villosa* (N.S.W. & Qd) differs from the latter in its almost glabrous ovaries, and from the closely related *P. foliolosa* in its longer leaves and setaceous bracteoles.]

### EUTAXIA R. Br. in Ait. f. (1811)

*E. microphylla* (R. Br.) J. M. Black *Flor. S. Aust.* 297 (1924).

*Sclerothamnus microphyllus* R. Br. in Ait. f. *Hort. kew.* ed. 2, 3: 16 (1811).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 337, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 592 N & 598 (1948); Williamson in Ewart, *Flor. Vict.* fig. 236 G (1931)—calyx; Lee, *Wild Life (Melb.)* 12: 200 (1950).

*Vern.*: *Eutaxia*. *Distr.*: ABCDEHJMNPR—also W.A., S.A., Tas. (Flinders Id), N.S.W., Qd.

[The var. *diffusa* (F. Muell., *ut sp.*) A. B. Court in *Vict. Nat.* 73: 173 (1957) differs from typical *E. microphylla* in its more erect habit (usually 3-4 ft.), non-spinescent branches, more distant leaves which are broader (oblong-lanceolate to  $\pm$  rhomboid), and much paler yellow flowers which are almost devoid of red veinings. It is scattered through western Victoria, from Bacchus Marsh district to Bendigo, Little Desert and Portland.]

### PHYLLOTA (DC.) Benth. in Endl. et al. (1837)

Leaves crowded toward summits of branches (forming dense fascicles), recurved and  $\pm$  mucronate at tips; flowers terminal, solitary or paired, clear yellow, almost hidden among the subtending floral leaves; bracteoles minute at base of calyx (heath-like shrub of W. Grampians and S. Mallee, suckering profusely when in deep sand):

*P. pleurandroides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 38 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 608 (1948).

*Vern.*: Heathy Phyllota. *Distr.*: BCDJ—also S.A.

Leaves distant on stem (never fascicled), subobtusely, not recurved at tips; flowers axillary, reddish, conspicuous; bracteoles large and papery, almost enveloping the calyx (shrub of Big Desert near S.A. border, tap-rooted and not suckering):

*P. remota* J. H. Willis in *Vict. Nat.* 73: 191 (1957).

*Vern.*: Slender Phyllota. *Distr.*: C—also S.A.

## AOTUS Sm. (1805)

*A. ericoides* (Vent.) G. Don *Gen. Syst.* 2: 120 (1832).

*Pultenæa ericoides* Vent. *Jard. Malm.* t. 35 (1804);

*A. villosa* (Andr.) Sm. in *Ann. Bot., Lond.* 1: 504 (1805);

*P. villosa* Andr. *Bot. Repos.* 5: t. 309 (1803), *non* Willd. (1799).

*Illust.*: Andrews (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 55, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 609 (1948), as *A. villosa*; *Curtis's bot. Mag.* 24: t. 949, col. (1806), as *A. villosa*; Garnet, *Wildflowers Wilson's Prom.* fig. 480 (1971).

*Vern.*: Common Aotus. *Distr.*: ABCDJKNPRTWZ—also W.A., S.A., Tas., N.S.W., Qd.

[In the Big Desert (incl. Wyperfeld Nat. Park) and far N.W. Mallee, *A. ericoides* occurs in a more *tomentose* form, often with rigid *spinescent* branches and darker, orange-red flowers. This population was given varietal rank, as *A. villosa* var. *subspinescens* Benth. *Flor. aust.* 2: 91 (1864), but the epithet has not yet been transferred to *A. ericoides*.]

## DILLWYNIA Sm. (1805)

1. Leaves *never pungent*,  $\pm$  distinctly petiolate 3  
 Leaves manifestly *pungent*,  $\pm$  trigonous, glabrous (taller shrubs of rocky places) 2
2. Leaves *straight, rigid, spreading*,  $\pm$  1 cm. long; flowers *subsessile*, few together in short terminal racemes or sometimes racemose in upper axils; calyx *pubescent, abruptly narrowed* at base, the petals *persistent* long after anthesis (shrub of E. & N.E., rarely >5 ft. high):

*D. juniperina* Lodd. *Bot. Cab.* 5: t. 40 (1820).

*Illust.*: Loddiges (*l.c.*).

*Vern.*: Prickly Parrot-pea. *Distr.*: NRSWZ—also N.S.W., A.C.T., Qd.

—Leaves often *slightly twisted*,  $\pm$  *erect*, 1-3 cm. long; flowers *pedicellate*, in loose terminal racemes; calyx *glabrous, tapering gradually* into pedicel, the petals *deciduous* immediately after anthesis (glabrous shrub 5-12 ft. high, endemic in Grampians):

*D. oreodoxa* W. F. Blakely in *Aust. Nat.* 10: 165 (1939).

*Illust.*: Ashby in *S. Aust. Mus. Wild Flower Post Card* n. 12, col. (1959).

*Vern.*: Grampians Parrot-pea. *Distr.*: DJ.

3. Flowers *axillary*, often apricot-coloured, solitary or few together, and *subsessile* in axils, forming *leafy racemes along apical parts* of the branches; leaves *straight*, 0.5-2 cm. long, *minutely tuberculate* or scabrid-hairy:

*D. sericea* A. Cunn. in *Field Geogr. Mem. N.S.W.* 347 (1825).

*D. floribunda* sens. Williamson in *Ewart Flor Vict* 642 (1931) *atque* auctt. plur., *non* Sm. (1805).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 86, col. (1968); Rosser, *Wildflowers Vict.* 77, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 68 (1967), as *D. floribunda*; Curtis, *Student's Flor. Tasm.* 1: fig. 39 B (1956), as *D. floribunda*; *Wild Life (Melb.)* 14: 219 (1951), as *D. floribunda*.  
*Vern.*: Showy Parrot-pea. *Distr.*: BCDEHJMNPRSTVWXZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Flowers *terminal*, or else pedicellate and in terminal or lateral *leafless clusters* 4

4. Leaves manifestly *spirally twisted*, <1 cm. long, *scabrid* or *white-bristly*; calyx glabrous or hairy (shrubs 1-4 ft. high, in E. and N.E.):

*D. retorta* (J. Wendl.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 619 (1917).

*Pultenæa retorta* J. Wendl. *Hort. Herrenhus.* t. 9 (1789-1801).

var. *phylicoides* (A. Cunn.) J. Thompson in *Proc. Linn. Soc. N.S.W.* 83: 189 (1958);

*D. phylicoides* A. Cunn. in *Field Geogr. Mem. N.S.W.* 347 (1825);

*D. ericifolia* Sm. var. *phylicoides* (A. Cunn.) Benth. *Flor. aust.* 2: 148 (1864);

*D. ericifolia* Sm. var. *parvifolia* (R. Br., *ut sp.*) Benth. *Flor. aust.* 2: 148 (1864).

*Illust.*: *Curtis's bot. Mag.* 37: t. 1527, col. (1813), as *D. parvifolia*; Loddiges, *Bot. Cabinet* 6: t. 559 (1821), as *D. parvifolia*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 201 (1970).

*Vern.*: Small-leaf Parrot-pea. *Distr.*: NRSVWZ—also N.S.W., A.C.T., Qd.

[Typical *D. retorta* of N.S.W. & Qd (*D. ericifolia* Sm. being synonymous) has *glabrous* foliage and the inflorescences often *pedunculate*.]

—Leaves *never* spirally twisted 5

5. Habit quite *prostrate*, almost glabrous; leaves 3-5 mm. long; flowers solitary or few together, shortly pedicellate (subalpine mat-plant of far N.E. Gippsland):

*D. prostrata* W. F. Blakely in *Aust. Nat.* 10: 167 (1939).

*Vern.*: Matted Parrot-pea. *Distr.*: W (Wulgulmerang)—also N.S.W.

—Habit erect or diffuse, *never* prostrate 6

6. Plant *wholly glabrous* or nearly so; leaves variable (0.5-2 cm. long), blunt and usually *recurved* at apex; flowering peduncles often *very long* (to 2 cm.), the yellow-and-red standard *twice as broad as long* (widespread shrub, usually 2-4 ft. high):

*D. glaberrima* Sm. in *Ann. Bot., Lond.* 1: 510 (1805).

*D. ericifolia* Sm. forma *glaberrima* (Sm.) Benth. *Flor. aust.* 2: 149 (1864).



*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 362, col. (1968); Williamson in Ewart, *Flor. Vict.* fig. 236 H (1931)—calyx, as *D. ericifolia*; Curtis's *bot. Mag.* 24: t. 944, col. (1806); Maiden, *Flower. Plants & Ferns N.S.W.* t. 12 (1895), as *D. ericifolia*; Curtis, *Student's Flor. Tasm.* 1: fig. 38 (1956).

*Vern.*: Smooth Parrot-pea. *Distr.*: BCDEJKMNPRSTVWZ—also S.A., Tas., N.S.W., Qd.

—Plants usually manifestly *pubescent* (hairs present at least on leaves or calyx) 7

7. Stems slender, *little branched*, bearing a *terminal head* of up to 12 pale yellow *subsessile* flowers; leaves  $\pm$  1 cm. long, glabrous, obtuse, the margins incurved but upper lamina *partly visible* (small, very rare shrub of N.E. and far E. highlands, apparently endemic):

*D. capitata* J. H. Willis in *Vict. Nat.* 73: 192 (1957).

*Vern.*: Slender Parrot-pea. *Distr.*: VW (Mt. Beauty & Mt. Stradbroke, resp.).

[The var. *uliginosa* J. H. Willis in *Muelleria* 1\*: 124 (1967) is a paludal variant, having wiry *procumbent* stems, consistently shorter leaves (4-6 mm.) and shorter bracteoles (< 1 mm.). It is known only from Mt. Stradbroke near Wulgulmerang, and bears a remarkable superficial resemblance to a trailing form of *Pultenaea subumbellata* Hook. on the nearby Nunniong Plateau.]

—Stems *much branched*, with numerous *loose inflorescences*; leaves  $\pm$  *terete*, with upper lamina completely obscured 8

8. Calyx *contracting gradually* into the short pedicel,  $\pm$  hispid or glabrous; corolla predominantly *red*, soon *deciduous*, the standard at least *twice as broad as long* and the dark crimson, *acuminate keel as long as the wings*; leaves rather crowded 3-10 mm. long, usually  $\pm$  scabrid; racemes on filiform glabrous peduncles much exceeding the leaves (to 15 mm. long or more):

*D. hispida* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 249 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 242, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 592 Q-s & 610 (1948).

*Vern.*: Red Parrot-pea. *Distr.*: BCDEHJKMNP—also S.A., N.S.W.

[The var. *glabripes* W. F. Blakely in *Aust. Nat.* 10: 165 (1939) seems to be superfluous, since the typical form of *D. hispida* frequently exhibits long naked flowering peduncles.]

—Calyx *sharply contracted and obtuse* at base, *hoary pubescent*; corolla predominantly *orange or yellow*, *persistent* after anthesis, the standard <twice as broad as long and the *blunt keel shorter than wings*; peduncles very short. 9

9. Leaves *scattered*, 3-7 mm. long, *thick, obtuse*, usually *much recurved*; flowers 2-5 in loose corymbose clusters (diffuse shrub of Mallee):

*D. uncinata* (Turcz.) J. M. Black *Flor. S. Aust.* 303 (1924).

*Eutaxia uncinata* Turcz. in *Bull. Soc. Nat. Moscou* 26: 269 (1853).

*Vern.*: Silky Parrot-pea. *Distr.*: BC—also W.A., S.A.

—Leaves crowded, usually 7-20 mm. long,  $\pm$  *filiform*, *acute*, not or only slightly recurved; flowers 3-8 in terminal almost sessile corymbs (widespread ericoid shrub 2-4 ft. high):

**D. cinerascens** R. Br. in *Curtis's bot. Mag.* 48: t. 2247, col. (1821).

*Illust.*: Brown (l.c.); Ewart, *Flor. Vict.* fig. 236 I & 260 (1931); Curtis, *Student's Flor. Tasm.* 1: fig. 39 A (1956); Charsley, *Wild Flowers Melb.* t. 9 (1867).

*Vern.*: Grey Parrot-pea. *Distr.*: CEHJMNPRSTW—also W.A., S.A., Tas.

[At the beginning of tribe *Podalyrieæ* in Ewart's *Flor. Vict.* 614 (1931) the tall leafless shrub, *Jacksonia clarkei* F. Muell. in *Proc. Linn. Soc. N.S.W.* 2: 193 (1887), is admitted as Victorian. The original description cites two localities—Hastings R. (*H. Beckler*) and Upper Delegate R. (*A. Clarke*). However, material of the latter is labelled "Sources of Cann River" in Melbourne Herbarium. N. A. Wakefield has pointed out, *Vict. Nat.* 69: 85 (1952), that the alleged occurrence in Victoria is quite erroneous and resulted from a mixture of data by F. Mueller. *J. clarkei* is apparently endemic in the coastal highlands of New England, N.S.W.]

## Tribe GENISTEÆ

### PLATYLOBIUM Sm. (1794)

1. Leaves *alternate*, ovate to  $\pm$  orbicular, *hardly pointed*, the petioles 1-2.5 cm. long; pod almost as broad as long (rare trailer of central and western hills where apparently endemic):

**P. alternifolium** F. Muell. in *Sth. Sci. Rec.* 3: 99 (1883).

*Vern.*: Victorian Flat-pea. *Distr.*: DJN.

- Leaves *opposite*, *subsessile*, the apex *acute*; pod 2-3 cm. long 2
2. Flowers (1-3 in upper axils) and pod both *subsessile*, the pedicel *concealed* by conspicuous imbricate bracts; bracteoles 6-7 mm. long; standard reniform, yellow-and-red, 15-20 mm. long; leaves ovate to broadly triangular, often hastate and  $\pm$  trilobate, usually with pungent lateral angles:

**P. obtusangulum** Hook. in *Curtis's bot. Mag.* 60: t. 3258, col. (1833).

*Illust.*: Hooker (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 592 A-G (1948); Ewart, *Flor. Vict.* fig. 271 (1931); *Curtis's bot. Mag.* 37: t. 1508, col. (1812), as *P. triangulare*.

*Vern.*: Common Flat-pea. *Distr.*: ACDEJKMNPSTW—also S.A., Tas.

[The var. *spinulosum* J. H. Willis in *Muelleria* 1<sup>st</sup>: 126 (1967) differs from the typical form in its erect habit and almost rotund leaves, the distal margins of which bear 3-7 slender spine-like teeth. It is a very rare plant, found only on the northern fringe of the Otway Ranges west of Anglesea.]

- Flowers and pods *conspicuously stalked*, with pedicels *exceeding the bracts* 3
3. Leaves *triangular*, often  $\pm$  *hastate*, the lateral angles usually *pungent*, rarely >2 cm. long; flower *solitary* in upper axils, the standard *hardly*

1½ times the length of calyx; bracteoles 3-4 mm. long; pod on a stalk 2-4 mm. long (wiry procumbent shrub of southern areas):

*P. triangulare* R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 266 (1812).

*Vern.*: Ivy Flat-pea. *Distr.*: DEJNT—also Tas.

—Leaves cordate, ± *ovate to elliptic lanceolate*, the lateral “angles” *always rounded*, 2-6 cm. long, leathery and strongly *reticulate*; flowers 2-3 *together*, the standard twice as long as calyx; bracteoles 6-7 mm. long; pod on a stalk > 4 mm. long (widespread, sometimes trailing shrub, usually 3-6 ft. high):

*P. formosum* Sm. in *Trans. Linn. Soc. Lond.* 2: 350 (1794).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 426, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 76 (1967); Curtis's *bot. Mag.* 37: t. 1520, col. (1813), as *P. parviflorum*; *ibid.* 14: t. 469, col. (1800); Burbidge, *Flor. Aust. Cap. Terr.* fig. 204 (1970); Garnet, *Wildflowers Wilson's Prom. t.*, col. n. 504 opp. 15 (1971).

*Vern.*: Handsome Flat-pea. *Distr.*: DJMNPRSTVWZ—also Tas., N.S.W., A.C.T., Qd.

#### BOSSIÆA Vent. (1800)

1. Plant normally *leafless*; stems *flattened and winged* 9  
Leaves *always present*; stems ± *terete* (except in *B. heterophylla*) 2
2. Leaves *opposite, orbicular-cordate*, mucronulate, 3-6 mm. long, on short slender petioles; flowers solitary, axillary on *filiform pedicels* 8-15 mm. long; pod 12-18 mm. long, on a stalk *exceeding* the calyx (wiry straggling shrub):

*B. cordigera* Benth. ex Hook. f. *Flor. Tasm.* 1: 95 (1856), t. 16 col. (1855).

*Illust.*: Fitch in Hooker f. (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flower & Plants Vict.* t. 404, col. (1968).

*Vern.*: Wiry Bossiæa. *Distr.*: EJKNS—also Tas.

—Leaves *alternate*

3. Branches usually *distichous*, with conspicuous dark *persistent stipules*; leaves 2-3 mm. wide, *orbicular*, close-set, often retuse, thick and convex, with obscure venation, sometimes adpressedly white-hairy beneath; flowers *subsessile*, often wholly yellow; ovary and pod *densely villose*; lower calyx-lobes ± *acute* (alps and subalps where frequent):

*B. foliosa* A. Cunn. in *Field Geogr. Mem. N.S.W.* 347 (1825).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 507, col. (1968); Mass, *Flowers aust. Alps* 45 (1967).

*Vern.*: Leafy Bossiæa. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Branches *hardly distichous* and, if leaves ever ± *orbicular*, then either flowers *pedicellate* or leaves *prominently veined*; calyx-lobes *obtusely*; ovary and pod *glabrous* or almost so

4. Stems *flattened and winged*; leaves  $\pm$  distichous, to about 1" long, the upper ones linear-lanceolate but lower ones very broad; flowers at least 1 cm. long, appearing in autumn (E. Gippsland):

**B. heterophylla** Vent. *Descr. Plant. nouv.* 1: 7, t. 7 (1800).

*Illust.*: Ventenat (l.c.); Taubert in Engler, *Natürl. PflFam.* III 3: 214 (1894); Curtis's *bot. Mag.* 28: t. 1144, col. (1808), as *B. lanceolata*; Banks & Solander, *Bot. Cook's Voy.* 1: t. 51 (1900); Loddiges, *Bot. Cabinet* 3: t. 271 (1818).  
*Vern.*: Variable Bossiæa. *Distr.*: TWXZ—also N.S.W., Qd.

—Stems *not winged*; flowers rarely attaining 1 cm., appearing in spring or summer 5

5. Shrubs *erect, rigid*, 2-5 ft. high, the smaller branches *terminating in spines*; leaves *obcordate*, 2-5 mm. wide, emarginate or having a recurved apex, glabrous, with prominent lateral veins (central and eastern Vic., uncommon):

**B. obcordata** (Vent.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 610 (1917).

*Platylobium obcordatum* Vent. *Jard. Malm.* t. 31 (1804);

*B. microphylla* (Sims) Sm. in *Trans. Linn. Soc. Lond.* 9: 303 (1808).

*Illust.*: Ventenat (l.c.); Curtis's *bot. Mag.* 22: t. 863, col. (1805), as *Platylobium microphyllum*; Loddiges, *Bot. Cabinet* 7: t. 656 (1822), as *B. microphylla*.  
*Vern.*: Spiny Bossiæa. *Distr.*: NSTVWZ—also Tas., N.S.W., Qd.

—Shrubs *never spiny*; leaves not emarginate nor with recurved apices 6

6. Leaves *ovate or rounded*, 3-5 mm. long; pedicels exceeding the leaves (procumbent, often *mat-forming* shrub):

**B. buxifolia** A. Cunn. in *Field Geogr. Mem. N.S.W.* 348 (1825).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 205 (1970).

*Vern.*: Matted Bossiæa. *Distr.*: GJNRSVWZ—also N.S.W., A.C.T., Qd.

—Leaves  $\pm$  *elongated*, >6 mm. long (plant never *mat-forming*) 7

7. Stems *procumbent*; leaves *ovate or oblong*, 6-12 mm. long, obtuse or acute but *never pungent*, distinctly petiolate; calyx *pubescent*; pod *sessile*:

**B. prostrata** R. Br. in *Curtis's bot. Mag.* 36: t. 1493, col. (1812).

*Illust.*: Brown (l.c.).

*Vern.*: Creeping Bossiæa. *Distr.*: CDEGHJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Stems *erect and spreading*; leaves *pungent-pointed*; calyx *glabrous*; pod on a stalk as long as calyx 8

8. Leaves  $\pm$  *triangular*, usually  $\pm$  10 mm. long (rarely to 20 mm.), 3-5 mm. wide at base tapered toward the apex, quite *sessile*, minutely scabrid above and  $\pm$  *hairy beneath* (widespread on southern heathlands):

**B. cinerea** R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 268 (1812).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 49, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 74 (1967); *Curtis's bot. Mag.* 68: t. 3895, col. (1841), as *B. tenuicaulis*; Charsley, *Wild Flowers Melb.* t. 9 (1867).  
*Vern.*: Showy Bossiæa. *Distr.*: DEHJKNPTW—also S.A., Tas., N.S.W.

—Leaves narrow-linear, 15-25 mm. long, only 1-2 mm. wide, with short but distinct petiole ( $\pm$  1 mm. long), glabrous or almost so (endemic in Grampians):

**B. rosmarinifolia** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 178 (1838).

*B. cinerea* R. Br. var. *rosmarinifolia* (Lindl.) Benth. *Flor. aust.* 2: 160 (1864).

*Vern.*: Grampians Bossiæa. *Distr.*: CDJ.

9. Flowers large, red, the keel  $\pm$  15 mm. long or more, much exceeding the standard; pods up to 6 cm. long and 1 cm. wide; branches  $\pm$  glaucous (very rare spreading bushes to 10 ft. high in Murray Mallee; leaves, when developed, broadly elliptic to  $\pm$  orbicular, 15-20 mm. long, glaucous, with prominent reticulate venation):

**B. walkeri** F. Muell. *Fragm. Phyt. Aust.* 2: 120 (1861).

*Illust.*: Cannon, *Publ. Carneg. Instn* n. 308: t. 29 (1921).

*Vern.*: Cactus Bossiæa. *Distr.*: FG (Boundary Bend to Piangil)—also W.A., S.A., N.S.W.

—Flowers small, yellow or blotched, the keel <10 mm. long, shorter than the standard; branches not glaucous 10

10. Stems broad, the upper branches with wings 2-5 mm. wide; flowers subsessile, the pedicel concealed by bracts but fruiting pedicel 2-3 mm. long; calyx-lobes uniform (montane to subalpine, in E. highlands):

**B. bracteosa** F. Muell. ex Benth. *Flor. aust.* 2: 166 (1864).

*Vern.*: Mountain Leafless Bossiæa. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Stems with wings of upper branches 1-3 mm. wide; flowering pedicels exceeding the bracts; upper calyx-lobes broader and united 11

11. Habit erect and much branched; wings of upper branches only 1-2 mm. wide; upper calyx-lobes obtuse, not falcate; pod  $\pm$  5 mm. wide, with thin margins (widespread, often riparian bush):

**B. riparia** A. Cunn. ex Benth. *Flor. aust.* 2: 166 (1864).

*Vern.*: River Leafless Bossiæa. *Distr.*: DEJNRZ—also Tas., N.S.W., A.C.T.

—Habit sprawling, with elongated and little-branched stems; wings of upper branches 2-3 mm. wide; upper calyx-lobes acute and falcately diverging; pod  $\pm$  8 mm. wide, with thickened margins; leaves sometimes present on lower parts, rotund, to 15 mm. long (coastal heaths of far E. Gippsland):

**B. ensata** Sieber ex DC. *Prodr.* 2: 117 (1825).

*Illust.*: Burnett, *Plant. Utiliores* 4: [t. 113 b] (1850)—in middle of book, both page & plate without numbers.

*Vern.*: Sword Bossiæa. *Distr.*: Z—also N.S.W., Qd.

TEMPLETONIA R. Br. in Ait. f. (1812)

1. Shrub *straggling*, <1 ft. high; lower leaves narrow-oblong, the upper ones linear, 1-2" long or more; calyx 4-lobed; corolla handsomely yellow and red-brown, 10 mm. long or more, *exceeding* twice the length of calyx (W. districts):

**T. stenophylla** (F. Muell.) J. M. Black *Flor. S. Aust.* 304 (1924).

*Bossiæa stenophylla* F. Muell. *Fragm. Phyt. Aust.* 1: 9 (1858).

*Vern.*: Leafy Templetonia. *Distr.*: BCDHJMNR—also S.A.

—Shrubs *erect, leafless*, >1 ft. high, with ribbed yellowish branches; corolla  $\pm$  5 mm. long, *not* twice the length of calyx which is  $\pm$  3 mm. (Mallee only) 2

2. Branches *virgately erect, terete*, furrowed; calyx 5-lobed:

**T. egena** (F. Muell.) Benth. *Flor. aust.* 2: 170 (1864).

*Daviesia egena* F. Muell. in *Trans. Vict. Inst.* 118 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 612 (1948); Mercer in Hurst, *Poison. Plants N.S.W.* 194 (1942).

*Vern.*: Round Templetonia (Broombush in N.S.W.). *Distr.*: ACG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Branches *divaricate, flattened* (4-6 mm. broad), striate, often  $\pm$  *thorny at apex*; calyx 4-lobed:

**T. sulcata** (Meissn.) Benth. *Flor. aust.* 2: 171 (1864).

*Bossiæa sulcata* Meissn. in Lehm. *Plant. Preiss.* 1: 81 (1844).

*Vern.*: Flat Templetonia. *Distr.*: ABCFHJ—also W.A., S.A., N.S.W.

HOVEA R. Br. in Ait. f. (1812)

1. Shrub with slender *decumbent stems*, rarely >1 ft. tall; lower leaves *short and ovate*, the upper ones narrow-lanceolate to linear and sometimes attaining 4 cm. in length, *glabrous to slightly pubescent beneath*; flowers usually bluish-mauve, 1-3 in each axil; *pod glabrous or sparingly pubescent* (widespread at lower altitudes, but not in alps):

**H. heterophylla** A. Cunn. ex Hook. f. *Flor. Tasm.* 1: 93 (1856), t. 15 col. (1855).

*Illust.*: Fitch in Hooker f. (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 369, col. (1968); Rodgers, *Wild Life (Melb.)* 1: 11 (Oct. 1939).

*Vern.*: Common Hovea. *Distr.*: CDEJMNPRSTVWZ—also Tas., N.S.W., A.C.T., Qd.

- Shrub *erect* (often stout or tall); under-surfaces of foliage and pod *densely tomentose*, often rusty; leaves 1-10 cm. long 2
2. Leaves *oblong-elliptic* to *lanceolate*, the upper surface *glabrous*, *shining* and *finely reticulate*, their margins variably revolute (montane to alpine):

*H. longifolia* R. Br. in Ait. f. *Hort. kew* ed. 2, 4: 275 (1812).

*Illust.*: Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 28, col. (1962), as var. *lanceolata*; Stones in *Victoria's Resources* 6<sup>3</sup>: cover, col. (1964)—alpine var.; *Curtis's bot. Mag.* 39: t. 1624, col. (1814), as *H. lanceolata*; Webster in *ibid.* 171: new ser. t. 305 (1957), as var. *lanceolata*; Mass, *Flowers aust. Alps* 45 (1967)—var. *montana*.

*Vern.*: Rusty-pods. *Distr.*: DJRSVWZ—also S.A., Tas., N.S.W., Qd, ? N. Terr.

[The var. *montana* (Hook. f.) J. H. Willis in *Muelleria* 1<sup>3</sup>: 127 (1967) is an alpine and subalpine variant of low stature (to 1 ft. high), with small broad bluntish leaves (10-20 × 3-6 mm.) and deep purple flowers that provide sheets of colour on many higher mountains of Victoria during early summer.]

—Leaves *narrow-linear* and much revolute, the upper surfaces *asperous* and with *prominently raised coarse reticulations*; flowers pale to deep mauve (tall slender shrub to 12 ft. high in S.E. highlands, with an isolated occurrence on Sailor's Ck at Hepburn):

*H. rosmarinifolia* A. Cunn. in *Field Geogr. Mem. N.S.W.* 348 (1825).

*H. longifolia* R. Br. *forma aspera* H. B. Williamson in *Ewart Flor. Vict.* 665 (1931).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 396, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 207 (1970).

*Vern.*: Mountain Beauty. *Distr.*: NSTVWZ—also N.S.W., A.C.T.

[The var. *villosa* J. H. Willis in *Muelleria* 1<sup>3</sup>: 127 (1967), of E. Gippsland, is distinguishable by its *dense and rusty, villous indumentum* that invests calyces, pedicels and undersides of leaves:]

### GOODIA Salisb. (1806)

Lower 3 calyx-lobes about *as long as tube*, *linear-lanceolate*; pod  $\pm$  1" long or more, *narrowing gradually* into the slender stipe; strophiole attached to seed by an *elongated  $\pm$  forked foot* (widespread in hilly forest-land):

*G. lotifolia* Salisb. *Paradisus lond.* 1: t. 41 (1806).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 398, col. (1968); Mercer in Hurst, *Poison. Plants N.S.W.* 161 (1942); Ewart, *Handb. For. Trees* t. 93 (1925); Edwards in *Curtis's bot. Mag.* 24: t. 958, col. (1806); Black, *Trans. roy. Soc. S. Aust.* 39: t. 10 opp. 97 (1915)—stamens; Burbidge, *Flor. Aust. Cap. Terr.* fig. 220 (1970).

*Vern.*: Golden-tip. *Distr.*: CDEJKNPRSTWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[The var. *pubescens* (Sims, *ut sp.*) Williamson in *Ewart Flor. Vict.* 658 (1931) differs from the typical glabrous or minutely hairy and often glaucous form in

being *manifestly pubescent all over*. Its leaves are usually narrower, racemes shorter (< 5 cm.) and flowers slightly smaller (standard < 10 mm. long). This variable population occurs in south-central Vic., extending to Tas.; in Dr. W. M. Curtis's *Student's Flor. Tasm. 1*: 145 (1956) it is retained at the level of a species.]

Lower calyx-lobes *shorter than tube, broad-lanceolate* to  $\pm$  deltoid; pod < 1" long (often < 2 cm.), *contracting abruptly* into stipe; strophiole attached to seed by a *short, almost undivided* foot (hills of farther W. Vic.):

*G. medicaginea* F. Muell. *Fragm. Phyt. Aust. 1*: 10 (1858).

*Vern.*: Western Golden-tip. *Distr.*: CJ (Mts Arapiles & Ben Nevis)—also W.A., S.A.

[This western taxon was synonymized under *G. lotifolia* in J. M. Black's *Flor. S. Aust.* ed. 2: 447 (1948), and also ignored by all recent publications on the flora of W.A. F. Mueller's consistent opinion that it merited distinct specific rank is now endorsed by the present writer.]

\*CALYCOTOME Link in Schrad. (1807)

\**C. spinosa* Link *Enum. Plant. Hort. berol. 2*: 225 (1822).

*Illust.*: Reichenbach, *Icon. Flor. germ. 22*: t. 16 fig. I & II, *col.* (1867-89); Coste, *Flor. Franc. 1*: fig. 749 (1901).

*Vern.*: Spiny Broom. *Distr.*: GJNP—also N.Z.

\*ULEX L. (1753)

\**U. europæus* L. *Spec. Plant. 2*: 741 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 616 (1948); Ross-Craig, *Drawings Brit. Plants 7*: t. 5 (1954); Davey, *J. Dep. Agric. Vict. 21*: 511 (1923); Parsons, *ibid. 56*: 799, *col.* (1958); *Honey Flora Vict.* (Dep. Agric.) ed. 5: 126 (1949); Wauer in Ewart, *Weeds . . . Vict. t. opp. 24, col.* (1909); Hegi, *Ill. Flor. Mittel-Eur. 4*: t. 158 fig. 4, *col.* (1923).

*Vern.*: Furze or Gorse. *Distr.*: HJNPRT—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

\*GENISTA L. (1753)

Leaflets *obovate* to *oblanceolate* or  $\pm$  *cuneate*, > 4 mm. wide, often *villose*, the margins *flat*; calyx  $\pm$  5 mm. long, its teeth *no longer* than tube; pod with 4-7 seeds, their strophioles well-developed (widespread):

\**G. monspessulana* (L.) L. A. S. Johnson in *Contr. N.S.W. Herb. 3*: 98 (1962).

\**Cytisus monspessulanus* L. *Spec. Plant. 2*: 740 (1753);

\**C. canariensis* sens. Williamson in Ewart *Flor. Vict. 667* (1931), atque auctt. plur. *non* (L.) Steud. (1821).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 617 (1948), as *Cytisus canariensis*; Curtis's *bot. Mag. 142*: t. 8685, *col.* (1916), as *C. monspessulanus*; Wauer in Ewart, *Weeds . . . Vict. t. opp. 21, col.* (1909), as *C. canariensis*; Abrams, *Ill. Flor.*



*Pacific States* 2: fig. 2647 (1944), as *C. monspessulanus*; Reichenbach, *Icon. Flor. germ.* 22: t. 28 fig. I & II, col. (1867-89), as *C. monspessulanus*.  
*Vern.*: Montpellier Broom. *Distr.*: DHJNPRSW—also S.A., Tas., A.C.T., N.Z.

Leaflets *linear* to narrow-lanceolate, <4 mm. wide, often *silky*, the margins *revolute*; calyx  $\pm$  8 mm. long, its teeth *acuminate* and *much longer* than tube; pod with only 2-3 seeds (chiefly coasts of Port Phillip Bay):

\**G. linifolia* L. *Spec. Plant.* ed. 2, 2: 997 (1763).

\**Cytisus linifolius* (L.) Lam. *Flor. franc.* 2: 624 (1778).

*Illust.*: Curtis's *bot. Mag.* 13: t. 442, col. (1799); Coste, *Flor. Franc.* 1: fig. 764 (1901).

*Vern.*: Flax-leaf Broom. *Distr.*: JNPT.

[In the *Flora Europæa* 2: 93 (1968), P. E. Gibbs has referred these two species to the genus *Teline* Medik., differing from *Genista* (sens. strict.) in having strophiolate seeds and the standard of corolla *longer* than its keel. If this view be accepted, then the correct names and authorities for the species are: *Teline monspessulana* (L.) C. Koch *Dendrologie* 1: 30 (1869), and *T. linifolia* (L.) Webb & Berth. *Phyt. Canar.* 2: 41 (1842).]

#### \*CHAMÆCYTISUS Link (1831)

\**C. proliferus* (L. f.) Link *Handb. Erkenn. nutzbar. Gewächse* 2: 154 (1831).

\**Cytisus proliferus* L. f. *Suppl. Plant.* 328 (1781).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 618 (1948), as *Cytisus proliferus*; Honey *Flora Vict.* (Dep. Agric.) ed. 5: 123 (1949), as *C. proliferus*; Breakwell, *Agric. Gaz. N.S.W.* 33: 486 (1922), as *C. proliferus* var. *palmensis*; Curtis's *bot. Mag.* 44: t. 1908, col. (1817), as *C. proliferus*.

*Vern.*: Tagasaste, Tree Lucerne. *Distr.*: NP—also W.A., S.A., Tas., N.S.W.

#### \*SAROTHAMNUS Wimmer (1832)

\**S. scoparius* (L.) Wimmer ex W. Koch *Synops. Flor. germ.* 152 (1837).

\**Spartium scoparium* L. *Spec. Plant.* 2: 709 (1753);

\**Cytisus scoparius* (L.) Link *Enum. Plant. Hort. berol.* 2: 241 (1822).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 8 (1954); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: 121 (1940), as *Cytisus*; Wauer in Ewart, *Weeds . . . Vict.* t. opp. 22, col. (1909), as *Cytisus*; Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 160 fig. 1, col. (1923); Everard, *Wild Flowers World* t. 10 fig. F, col. (1970), as *Cytisus scoparius*.

*Vern.*: English Broom. *Distr.*: HJNRTZ—also S.A., Tas., N.S.W., N.Z.

#### \*CYTISUS L. (1753)

\**C. multiflorus* (L'Hérit.) Sweet *Hort. brit.* 112 (1827).

\**Spartium multiflorum* L'Hérit. in Ait. *Hort. kew.* 3: 11 (1789).

*Illust.*: Curtis's *bot. Mag.* 143: t. 8693, col. (1917), as *C. albus*; Edwards's *Bot. Register* 14: t. 1191, col. (1828).

*Vern.*: White Spanish Broom. *Distr.*: J—also S.A., N.Z.

[Spanish Broom, *Spartium junceum* L., persists occasionally around old gardens but does not appear to be naturalized in Victoria, as it is on the Mt. Lofty Ranges near Adelaide. This tall Mediterranean shrub has almost leafless, glabrous, rush-like branches, large fragrant yellow flowers in elongated terminal racemes and a one-lipped scarious calyx.

Another Mediterranean member of the tribe *Genisteæ*, viz. *Lupinus hirsutus* L. (Hairy Blue Lupin), appeared at Lower Bridgewater near Portland in March 1945, then later at Murrayville, but it is not yet known to be truly naturalized in Victoria. This erect, very hairy annual is already established in all the other mainland States, and was probably first planted as a sand-binder. It has 7-11 oblongeolate leaflets and differs from the similar blue-flowered *L. pilosus* Murr. in having *irregularly whorled* flowers, with the lower calyx-lip *deeply trifid*, and a narrower pod (10-12 mm. wide).]

### Tribe TRIFOLIÆ

#### \*ONONIS L. (1753)

Perennial *rhizomatous* undershrub; stems procumbent or ascending, to 2 ft. long, *uniformly hairy*, *rooting at base*, the lateral branchlets usually quite *unarmed*; corolla pink or white, the wings *equalling* keel; pod *shorter* than calyx:

\**O. repens* L. *Spec. Plant.* 2: 717 (1753).

*O. arvensis* sens. auctt. plur., *non certe* L. (1767).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 9 (1954); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 233 (1931), as *O. arvensis*; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 160 fig. 3 d-k, *col.* (1923), as *O. spinosa* subsp. *procurrens*; Reichenbach f., *Icon. Flor. germ.* 22: t. 2097 fig. iv, *col.* (? 1875).

*Vern.*: Restharrow. *Distr.*: Native to western and northern Europe; introduced in N.Z., Tas. and Victoria, where occasional, chiefly on western pasture lands (Hamilton, Meredith, Woodend, Cranbourne).

As for the last, but *not rhizomatous*, the *non-rooting* stems with 2 lines of hairs, branchlets usually *spiny*, corolla-wings *shorter* than keel and pod *exceeding* the calyx:

\**O. spinosa* L. *Spec. Plant.* 2: 716 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 10 (1954); Strudwick, *Further Ill. Brit. Plants* fig. 122 (1930); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 160 fig. 3 a & b, *col.* (1923); Reichenbach f., *Icon. Flor. germ.* 22: t. 2097 fig. i-iii, *col.* (? 1875), as *O. campestris*.

*Vern.*: Spiny Restharrow. *Distr.*: Native to Eurasia and N. Africa; recorded in 1908 as an occasional weed in Victoria, but Cobden (Mar. 1913) seems to be the last collection-site and the species may now have died out in this State.

[*O. natrix* L. (Goat Root), from the Mediterranean, appeared at Campbell's Creek near Castlemaine in 1864, but seems neither to have re-appeared nor become naturalized anywhere else in Victoria; it is distinguished by rather large striped yellow flowers, with very glandular acuminate calyx-lobes  $\pm$  1 cm. long.]

## TRIGONELLA L. (1753)

Prostrate *glabrous* annual; flowers  $\pm$  *orange or pinkish*, 1-3 on short axillary peduncles; calyx  $\pm$  5 mm. long, the teeth *setaceous*; pod *smooth*, 6-8 mm. long, only *slightly exceeding* calyx:

\**T. ornithopodioides* (L.) Lam. & DC. *Flor. franc.* ed. 3, 4: 550 (1805).

*Trifolium ornithopodioides* L. *Spec. Plant.* 2: 766 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 633 (1948); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 244 (1931), as *T. purpurascens*; Coste, *Flor. Franc.* 1: fig. 848 (1901); Reichenbach f., *Icon. Flor. germ.* 22: t. 56 fig. iii-iv, col. (?) 1875; Burbidge, *Flor. Aust. Cap. Terr.* fig. 212 (1970).

*Vern.*: Birdsfoot Fenugreek. *Distr.*: Native to Mediterranean region and W. Europe (including Britain); introduced in S. Afr., N.Z., Tas., S.A. and Victoria, where scattered in pasture land at Glenisla, Colac, Warnambool, Peshurst, Seymour, Numurkah, Berwick & Narre Warren, Yarram, Inglewood etc.

Diffuse fragrant, *slightly hairy* annual; flowers very *pale yellow*, 4-8 in loose  $\pm$  *sessile axillary clusters*; calyx 3-4 mm. long, the teeth *lanceolate*; pod *reticulate, pubescent*, curving upwards, 8-15 mm. long and 3-4 times longer than calyx:

*T. suavissima* Lindl. in Mitch. *Three Exped. E. Aust.* 1: 253 (1838).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 32 (1939); Myers in Turner, *Forage Plants Aust.* t. opp. 21 (1891); Mueller, *Key Syst. Vict. Plants* 2: fig. 47 A & B (1886); also Schoenfeld in Mueller, *Plants indig. Colon. Vict.* 1 (Lithogr.): Suppl. t. 15 (1864-5).

*Vern.*: Sweet Fenugreek (Menindie Clover). *Distr.*: Localized in Victoria, on inundated flats at Lake Albacutya (Oct. 1907), near Mildura (Oct. 1936), Liparoo at southern edge of Kulkyne Nat. Forest (Oct. 1960) and reported also from Cohuna; otherwise found in temperate inland localities of all States except Tas.

## \*MEDICAGO L. (1753)

1. Plants *hairy* (at least on the young parts and under-surfaces of leaves) or, if almost *glabrous*, then either the flowers *purplish* or the pods not spirally coiled 5  
Plants *glabrous* or almost so; flowers *yellow* 2
2. Pod 1-2 cm. wide, unarmed or with long appressed spines 4  
Pod (excluding the spreading spines) <8 mm. wide (flowers <5 mm. long) 3
3. Stipules *toothed*; each leaflet usually with a *reddish-brown spot* near centre; pod  $\pm$  *globose*, only *faintly reticulate*, with a double row of curved or hooked spines around edges of coils:

\**M. arabica* (L.) Huds. *Flor. angl.* 288 (1762).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 16 b-c & 33 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 640 (1948); Ewart, *Flor. Vict.* fig. 267 (1931); Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 535 (1965), as "Spotted Medic"

(fr.); Quinn in Summers, *J. Dep. Agric. S. Aust.* 377 (1907), as *M. maculata*; Ross-Craig, *Drawings Brit. Plants* 7: t. 16 (1954).  
*Vern.*: Spotted Medic. *Distr.*: EJMNPVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Stipules deeply *lacinate*; leaflets *without spots*; pod distinctly *flattened*, *strongly reticulate*, either with spreading hooked spines in a double row, short straight teeth or (more rarely) quite unarmed:

\**M. polymorpha* L. *Spec. Plant.* 2: 779 (1753).

*M. hispida* J. Gært. *Fruct. & Semin. Plant.* 2: 349, t. 155 (1791).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 7, 15, 16 a, 19 d & 36 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 635 d (1948)—fruit; Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 533 col. & 534 (1965), as "Burr Medic"; Maiden, *Agric. Gaz. N.S.W.* 7: t. opp. 740 (1896); Quinn in Summers, *J. Dep. Agric. S. Aust.* 11: 376 (1907); Ross-Craig, *Drawings Brit. Plants* 7: t. 15 (1954)—all as *M. denticulata*, except Quinlivan; Burbidge, *Flor. Aust. Cap. Terr.* fig. 211 A (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 87 (1965).

*Vern.*: Burr Medic. *Distr.*: ABCDEFGHJKLMNPRUVWXZ—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

[Some authorities, notably J. M. Black in *Flor. S. Aust.* ed. 2: 459 (1948), accept as distinct species those populations having pods with hooked *spines*, straight *teeth* and mere *tubercles* respectively; but, in Victoria, every gradation between the extremes has been observed *within* a single colony of otherwise homogeneous plants, and it is considered impracticable to recognize these three conditions even as varieties of *M. polymorpha* L. L. H. Shinnars in *Rhodora* 58: 2-13 & 310 (1956) discusses thoroughly the "Authorship and nomenclature of bur clovers (*Medicago*) found wild in the United States", assigning formal rank to the three Victorian races of *M. polymorpha* which are *all* referable to the variety *vulgaris* (Benth., *ut M. denticulata* var.) Shinnars *l.c.* 310 (1956), thus: *forma vulgaris*, *forma apiculata* (Willd., *ut sp.*) Shinnars, and *forma tuberculata* (Godron, *ut M. polycarpa* var.) Shinnars. These correspond, respectively, to the varieties *denticulata*, *apiculata* and *confinis* of *M. hispida*, used in Ewart's *Flor. Vict.* 655 (1931). Typical *M. polymorpha* (syn. *M. hispida* J. Gært. & *M. lappacea* Desr.) has a larger burr, with 4-6 spirals attaining 7-10 mm. diam., and does not seem to have appeared in Victoria.]

4. Corolla 5-7 mm. long; peduncle *without awn*; pod *barrel-shaped*, 1-2 cm. high, covered with sharp *appressed spines* 5-7 mm. long:

\**M. intertexta* (L.) Mill. *Gdnrs Dict.* ed. 8, n. 4 (1768).

*M. polymorpha* L. var. *intertexta* L. *Spec. Plant.* 2: 780 (1753);

*M. echinus* Lam. & DC. *Flor. franc.* ed. 3, 4: 546 (1805).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 637 c (1948)—fruit; Quinlivan, *J. Dep. Agric. S. Aust.* ser. 4, 6: 535 (1965)—fruit, as "Calvary Medic"; Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 1253 fig. 1372 b (1923)—fruit, as var. *echinus*; Taubert, *Natürl. PflFam.* III 3: 246 fig. 112 g (1894)—fruit, as var. *echinus*.

*Vern.*: Calvary Medic. *Distr.*: P (Drysdale)—also S.A., N.S.W.

[*M. echinus* DC. appears to differ only in having 5-10 flowers per peduncle, and would be better treated as a variety or form of *M. intertexta*; in Victorian populations the number of flowers is 1-3.]

—Corolla <5 mm. long; peduncle terminating in a distinct awn  $\pm$  5 mm. long; pod lenticular or *button-shaped*, 1-2 cm. wide but only 1-2 mm. high, each of the 3-5 flat spiral coils with *prominent transverse veins* 1-3 mm. apart:

\**M. orbicularis* (L.) All. *Flor. Ped.* 1: 314 (1785).

*M. polymorpha* L. var. *orbicularis* L. *Spec. Plant.* 2: 779 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 19 A (1939); Black, *Flor. S. Aust.* ed. 2: fig. 635 A (1948)—fruit; Ewart, *Flor. Vict.* fig. 268 (1931); Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 535 (1965)—fruit, as "Button Medic"; F. C. W. in Maiden, *Agric. Gaz. N.S.W.* 5: t. opp. 6 fig. 1 (1894); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>s</sup>: 1267 fig. 1377 a-d (1923).

*Vern.*: Button Medic. *Distr.*: MR—also W.A., S.A., N.S.W., Qd.

5. Pod globular or barrel-shaped, *beset with spines*; flowers yellow, 3-4 mm. long, 1-3 per peduncle (procumbent annuals) 8

Pod *not* as above, *very flattened*, entirely *unarmed* 6

6. Flowers *purplish*, 8-10 mm. long, numerous in racemes longer than leaves; pod coiled 2-4 times in a *loose flat spiral* ( $\pm$  5 mm. wide) with *hollow centre* (deep-rooted perennial to 3 ft. high):

\**M. sativa* L. *Spec. Plant.* 2: 778 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 37 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 636 (1948); Wall in Clarke, *Bull. Dep. Agric. S. Aust.* No. 313: t. opp. 82, col. (1937); *Honey Flora Vict.* (Dep. Agric.) ed. 5: 122 (1949); Blake & Raff, *Qd Agric. J.* 80: 275 (1955); Ross-Craig, *Drawings Brit. Plants* 7: t. 12 (1954).

*Vern.*: Lucerne (Alfalfa). *Distr.*: AJKMNPW—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[One of the most valuable fodder plants in the Commonwealth, widely planted and spontaneous in many places (including the Melbourne suburbs).]

—Flowers *yellow*, <8 mm. long; pod *not* as above, strongly *reticulate* (procumbent annuals) 7

7. Plant *finely pubescent*; leaflets orbicular to obovate, *minutely denticulate*; flowers 2-3 mm. long, *numerous* on a peduncle *longer* than leaf; pod 2-3 mm. wide, *reniform*, *not spirally coiled*, black when ripe:

\**M. lupulina* L. *Spec. Plant.* 2: 779 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 19 c & 35 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 635 c & 639 (part) (1948); Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 535 (1965)—fruit, as "Black Medic"; Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 46 A-c (1940); Ross-Craig, *Drawings Brit. Plants* 7: t. 14 (1954); Hegi *Ill. Flor. Mittel-Eur.* 4<sup>s</sup>: t. 161 fig. 3, col. (1923); Everard, *Wild Flowers World* t. 10 fig. D, col. (1970).

*Vern.*: Black Medic. *Distr.*: CKNPVW—also W.A., S.A., Tas., N.S.W., N.Z.

—Plant rather *coarsely glandular-pubescent*; leaflets obovate to narrow-elliptic, *coarsely toothed*; flowers 5-7 mm. long, 1-3 on an awned

peduncle *shorter* than leaf; pod 10-12 mm. wide, almost *hemispherical*, with flattened rose-like top consisting of 5-6 almost vertical *cup-shaped coils*, pale when ripe:

\**M. scutellata* (L.) Mill. *Gdnrs' Dict.* ed. 8: n. 2 (1768).

*M. polymorpha* L. var. *scutellata* L. *Spec. Plant.* 2: 779 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 19 B (1939); Black, *Flor. S. Aust.* ed. 2: fig. 635 B & 637 A (1948)—fruit; Ewart, *Flor. Vict.* fig. 269 (1931); Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 533 col., & 535 (1965), as "Snail Medic"; Crawford in *J. Dep. Agric. S. Aust.* 63: 528-531 (1960); F. C. W. in Maiden, *Agric. Gaz. N.S.W.* 5: t. opp. 6 fig. 2 (1894); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 1267 fig. 1377 e-g (1923).

*Vern.*: Snail Medic. *Distr.*: ABR—also W.A., S.A., Tas., N.S.W.

8. Pod (excluding spines) 3-4 mm. wide,  $\pm$  *globular*; spines *slender*, manifestly *hooked*, *grooved* or channelled toward the base, widely spreading (downy plant with almost *entire* stipules):

\**M. mininia* L. *Flor. angl.* 21 (1754).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 18 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 639 in part (1948)—fruit; Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 533 col., & 535 (1965), as "Goldfields Medic"; Breakwell, *Grasses & Fodder Plants N.S.W.* fig. 164 n. 2 (1923); Ross-Craig, *Drawings Brit. Plants* 7: t. 17 (1954); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 161 fig. 5, col. (1923).

*Vern.*: Little Medic. *Distr.*: ABCHMNPRW—also W.A., S.A., Tas., N.S.W., N.Z.

- Pod 5-6 mm. wide, *barrel-shaped*, slightly narrowed and flattened at both ends; spines *robust*, *without hooks or grooves*, either spreading or curved and  $\pm$  appressed; leaf obovate-cuneate, *regularly dentate* toward apex (stipules *deeply toothed*):

\**M. truncatula* J. Gærtn. *Fruct. & Semin. Plant.* 2: 350, t. 155 (1791).

*M. tribuloides* Desr. in *Encycl. méth. Bot.* 3: 635 (1791-92).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 638 (1948), as *M. tribuloides*; Crawford, *J. Dep. Agric. S. Aust.* 65: 216-17 (1962), as *M. tribuloides*; Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 533 col., & 534 (1965), as "Barrel Medic"; Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 1272 fig. 1380 f & g (1923).

*Vern.*: Barrel Medic. *Distr.*: ACHNP—also S.A., N.S.W., Cent. Aust.

[The very closely related *M. obscura* Retz. var. *helix* (Willd., *ut sp.*) Urb. appeared at Walpeup (far N.W. Mallee) during 1965. This differs from *M. truncatula* in its longer peduncles (equalling or exceeding the leaves), shorter conical spines on burr, and *obtuse* marginal keel to the spirals.]

- As for the last, but the slightly hooked spines *grooved* toward base and the leaves *deeply and irregularly lobed*:

\**M. laciniata* (L.) Mill. *Gdnrs' Dict.* ed. 8: n. 5 (1768).

*M. polymorpha* L. var. *laciniata* L. *Spec. Plant.* 2: 781 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 17 (1939); Quinlivan, *J. Dep. Agric. W. Aust.* ser. 4, 6: 533 col., & 535 (1965), as "Cutleaf Medic"; Breakwell, *Grasses & Fodder Plants N.S.W.* fig. 164, n. 1 (1923); Reichenbach, *Icon. Flor. germ.* 22: t. 64 fig. II, col. (1867-89); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 1252 fig. 1371 d & e (1923).

*Vern.*: Cut-leaf Medic. *Distr.*: AF—also W.A., N.S.W.

[*M. arborea* L. (Tree Medic, Tree Alfalfa or Moon Trefoil) is a downy evergreen shrub 3-6 ft. high, native to Italy and Greece. It is occasionally grown for ornament in Victorian gardens, and has yellow broom-like flowers in short terminal racemes. A useful survey of the genus is to be found in Chaia Heyn's "The Genus *Medicago* in Linnæus's Species Plantarum", *Bull. Res. Council. Israel* 7D<sup>3-4</sup>: 137-74 (1959) (Sect. D. Bot.).]

### \*MELILOTUS (L.) Hill (1756)

Flowers yellow, 2-3 mm. long, in  $\pm$  dense narrow racemes *slightly longer* than leaves; pod  $\pm$  *pilular, obtuse*, 2-3 mm. long, olive-green and reticulate when ripe:

\**M. indica* (L.) All. *Flor. Ped.* 1: 308 (1785).

*Trifolium Melilotus indica* L. *Spec. Plant.* 2: 765 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 38 (1939); Gardner in Meadly, *Weeds W. Aust.* 96 col., & 97 (1965); Black, *Flor. S. Austr.* ed. 2: fig. 634 (1948); Ross-Craig, *Drawings Brit. Plants* 7: t. 21 (1954); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 8, col. (1958); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 8: t. opp. 160, col. 162 (1959); Maiden, *Weeds N.S.W.* t. opp. 54, col. (1920), as *M. parviflora*; Gardner in Orchard, *J. Dep. Agric. S. Austr.* 50: 174 (1946); Burbidge, *Flor. Austr. Cap. Terr.* fig. 210 (1970).

*Vern.*: Sweet Melilot. *Distr.*: ABCEGJMNPW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Flowers yellow,  $\pm$  5 mm. long, in loose racemes *shorter* than leaves; pod  $\pm$  *triangular, acute*, 6-8 mm. long, the sides finely sculptured with *close concentric ribs*, pale brown when ripe:

\**M. messanensis* All. *Flor. Ped.* 1: 309 (1785).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 22: t. 74 fig. I & II, col. (1867-89); Coste, *Flor. Franc.* 1: fig. 859 (1901).

*Vern.*: Mediterranean Melilot. *Distr.*: HP—also S.A.

—Flowers white,  $\pm$  5 mm. long, in slender rather loose racemes *far longer* than leaves; pod ovoid, broadly acute, 3-5 mm. long, brown and reticulate when ripe:

\**M. alba* Medik. in *Vorles. Churpf. phys.-ökon. Ges.* 2: 382 (1787).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) 6 (1939), as "Bokhara Clover"; Ross-Craig, *Drawings Brit. Plants* 7: t. 19 (1954); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 17 A (1951), as *M. albus*; E. F. P. in Breakwell, *Grasses & Fodder Plants N.S.W.* fig. 160 (1923); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 162 fig. 1, col. (1923), as *M. albus*.

*Vern.*: Bokhara Clover. *Distr.*: ABJMW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[*M. officinalis* (L.) Pall. (Common Melilot) has been noted as an occasional weed about Melbourne and in the Wimmera—chiefly among crops of lucerne. It closely resembles *M. indica*, but differs in the much longer lax racemes, larger flowers (5 mm. long) with wings and standard *equal*, and in the slightly larger (3-5 mm.), ovoid, acutish pod which is brown when ripe and *strongly wrinkled* transversely; it is widespread throughout Europe and Asia, and is naturalized in Tasmania, New South Wales and South Australia.]

### \*TRIFOLIUM L. (1753)

1. Flowers of *two kinds*—the 2-5 outer complete and fertile, but all *later-formed* inner flowers of head reduced to solid calyces, the rigid recurving lobes of which act as *anchors* in securing ripened pods in the soil; petals white or pinkish (prostrate  $\pm$  hairy annual, the long axillary peduncles turning down into earth after anthesis and *burying the pods* until maturity):

\**T. subterraneum* L. *Spec. Plant.* 2: 767 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 14 (1939); Aitken & Drake, *Proc. roy. Soc. Vict.* new ser. 53: 344-5, 354 (1941); *J. Dep. Agric. Vict.* new ser. 58: 71, 600 (1960); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 151-2 (1957); Quinlivan, *ibid.* ser. 3, 6: 345-52 (1957), also in ser. 4, 3: 115-9 col., & 121 (1962); Ross-Craig, *Drawings Brit. Plants* 7: t. 23 (1954).

*Vern.*: Subterranean Clover. *Distr.*: CDEHJKMNPRWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

[The most important pastoral species of the genus in Australia, where more than 50 agricultural strains were known and described by 1940; the strains are chiefly distinguished by leaf, petal and seed colour, size, degree of hairiness and length of stem internodes—"Mt. Barker" strain is the most widespread throughout temperate parts of the Commonwealth.]

- Flowers all *alike* in head; peduncles *not* bending down into earth 2
2. Fruiting calyx *never* bladdery (usually remaining unchanged), the upper lip *not* hooded 4
- Fruiting calyx becoming *inflated and bladdery*, the 2-lobed upper lip *hooded* and much larger than lower; heads pedunculate; flowers pink or purplish (stems and leaves glabrous or almost so) 3
3. Peduncles *shorter* than leaves; fruiting calyx *densely white-woolly*, with 2 *very short* teeth hidden by the woolly investment (small weak annual; veins of leaflet simple or once-forked):

\**T. tomentosum* L. *Spec. Plant.* 2: 771 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 28 (1939); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 156 (1957); Reichenbach, *Icon. Flor. germ.* 22: t. 107 fig. I, col. (1867-89).

*Vern.*: Woolly Clover. *Distr.*: ABCDEGHJMNP—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.



—Peduncles *as long as* or longer than leaves; fruiting calyx *slightly woolly*, but showing strong reticulate venation; 2 teeth of calyx-hood *prominent*, awn-like and spreading (weak *annual*; veins of leaflet *simple or once-forked*):

**\*T. resupinatum** L. *Spec. Plant.* 2: 771 (1753).

*Illust.*: Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 157 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 4: 1320 fig. 1407 (1923); Coste, *Flor. Franc.* 1: fig. 873 (1901).

*Vern.*: Shaftal Clover (Reversed Trefoil). *Distr.*: EJKMNPT—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—As for the last, but a prostrate strongly rooting *perennial* (with preference for lime-rich soils) and the very prominent *close-set* veins of leaflet all *twice-forked* (projecting from margin as minute mucros):

**\*T. fragiferum** L. *Spec. Plant.* 2: 772 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 4 & 23 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 620 (1948); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 158 (1957); *Honey Flora Vict.* (Dep. Agric.) ed. 5: 121 B (1949); Breakwell, *Grasses & Fodder Plants N.S.W.* fig. 154 & 156 (1923); Ross-Craig, *Drawings Brit. Plants* 7: t. 38 (1954).

*Vern.*: Strawberry Clover. *Distr.*: DEHJKMNPT—also W.A., S.A., Tas., N.S.W., N.Z.

- |  |   |
|--|---|
| 4. Flowers white, pink or purplish   | 6 |
| Flowers yellow, shortly stalked; heads distinctly pedunculate  | 5 |
| 5. Heads loose, 5- to 20-flowered; standard $\pm$ 3 mm. long, narrow, almost smooth, remaining straight: |   |

**\*T. dubium** Sibth. *Flor. oxon.* 231 (1794).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 34 (1939); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 163 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 40 (1954); Muenscher, *Weeds* 305 (1935); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 46 D-E (1940).

*Vern.*: Suckling Clover. *Distr.*: DEHJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Heads *dense*, hop-like at maturity, >20-flowered (flowers up to 50); standard 4-5 mm. long, very broad, obovate, lined with furrows, finally *decurved* over the other corolla segments:

**\*T. campestre** Schreb. in Sturm *Dtsch. Flor.* Abt. 1, Heft 16: t. 253 (1804).

*T. procumbens* auctt., non certe L. *Spec. Plant.* 2: 772 (1753).

*Illust.*: Morgan, *Clover & Allied Species* (Dep. Agric. Vict.) fig. 8, 21, 31 (1939), as *T. procumbens*; Black, *Flor. S. Aust.* ed. 2: fig. 619 (1948), as *T. procumbens*; Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 162 (1957); Quinn in Summers, *J. Dep. Agric. S. Aust.* 11: 579 (1908), as *T. agrarium*; Ross-Craig, *Drawings Brit. Plants* 7: t. 39 (1954); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 46 F-H (1940).

*Vern.*: Hop Clover (Hop Trefoil). *Distr.*: BCDEHJMNPRSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

6. Plants  $\pm$  hairy or, if ever nearly glabrous, then the large purplish heads 1" wide or more; flowers sessile or almost so [except in *T. stellatum* which has few-flowered villose heads], mostly without bracts 10  
Plants glabrous; each flower stalked in the axil of a small bract, white or rosy 7
7. Heads small, <1 cm. wide; corolla only slightly exceeding calyx-teeth which become recurved at maturity (small decumbent annuals) 9  
Heads large, 1-2 cm. wide; corolla at least twice as long as calyx, the teeth of which remain straight 8
8. Pedicels of all flowers 4-8 times as long as calyx-tube, soon sharply decurved; calyx-teeth acicular, 2-3 times as long as the tube (annual with hollow stems):

\**T. michelianum* Savi *Flor. Pisana* 2: 159 (1789).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 22: t. 117 fig. I, col. (1867-89); Coste, *Flor. Franc.* 1: fig. 885 (1901).

*Vern.*: Annual White Clover. *Distr.*: NR (Burnley & Wangaratta).

—Pedicels of all flowers about as long as or shorter than calyx-tube, not decurving until after anthesis; calyx-teeth lanceolate, about as long as tube (creeping perennial with solid, prostrate stems, rooting at the nodes; stipules with short subulate points):

\**T. repens* L. *Spec. Plant.* 2: 767 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 1-4, 5 A, 6 A, 22 (1939); *Honey Flora Vict.* (Dep. Agric.) ed. 5: 121 A (1949); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 173 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 37 (1954); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>2</sup>: t. 164 fig. 2, col. (1923).

*Vern.*: White Clover (Dutch Clover). *Distr.*: DEHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—As for the last, but the ascending to erect stems hollow, stipules long-acuminate, pedicels of upper flowers longer than calyx-tube and  $\pm$  subulate calyx-teeth slightly longer than tube:

\**T. hybridum* L. *Spec. Plant.* 2: 766 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 11 n. 2, 27 (1939); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 169 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 36 (1954); Curtis's bot. Mag. 65: t. 3702, col. (1839); Reichenbach, *Icon. Flor. germ.* 22: t. 117 fig. 2, col. (1867-89).

*Vern.*: Alsike Clover. *Distr.*: MN—also W.A., Tas., N.S.W., N.Z.

9. Heads on short but slender peduncles; pedicels about as long as calyx-tube, becoming strongly recurved in fruit; corolla pink, about as long as the  $\pm$  erect calyx-teeth; stipules conspicuous, broad, membranous:

\**T. cernuum* Brot. *Phyt. Lusit.* 1: 150 (1816).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 30 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 623 (1948); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 167 (1957); Coste, *Flor. Franc.* 1: fig. 887 (1901).

*Vern.*: Drooping-flower Clover. *Distr.*: CEMNP—also W.A., S.A., Tas., N.S.W.

—Heads *sessile* in the leaf-axils; flowers *sessile*; corolla *pink*, much longer than the widely *spreading* or recurved calyx-teeth (with broad *overlapping* bases); stipules conspicuous, *broad*, membranous, 5-10 mm. long:

\**T. glomeratum* L. *Spec. Plant.* 2: 770 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 29 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 624 (1948); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 163 (1957); Quinn in Summers, *J. Dep. Agric. S. Aust.* 11: 578 (1908); Ross-Craig, *Drawings Brit. Plants* 7: t. 33 (1954).

*Vern.*: Cluster Clover. *Distr.*: BCDEHJMNPRSVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—As for the last, but minute *white* corolla *shorter* than the non-overlapping calyx-teeth and *narrow* stipules <5 mm. long:

\**T. suffocatum* L. *Mant. Plant.* 2: 276 (1771).

*Illust.*: Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 164 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 34 (1954).

*Vern.*: Suffocated Clover. *Distr.*: PR—also W.A., S.A., Tas., N.S.W.

10. Robust  $\pm$  pubescent *perennial*; leaflets 1-3 cm. wide, often with a crescentic white spot near base; stipules large, stem-clasping, white and heavily veined in green; heads ovoid, large (2-3 cm. wide), pink to reddish-purple, the corolla much longer than calyx:

\**T. pratense* L. *Spec. Plant.* 2: 768 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 5 c, 6 b, 11 n. 1, 12, 13 (1939); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 175 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 24 (1954); E. F. P. in Breakwell, *Grasses & Fodder Plants N.S.W.* fig. 150 (1923).

*Vern.*: Red Clover. *Distr.*: MNRSTV—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Annuals; heads <2 cm. wide, often becoming oblong or cylindrical 11

11. Heads *sessile*, ovoid to oblong; calyx *moderately hairy*, conspicuously 10-ribbed 15

Heads *pedunculate*; calyx either *densely villose* or *glabrous*, the surface features often obscured 12

12. Leaflets *narrow* (>3 times as long as broad), linear-oblong to linear-lanceolate or narrow-linear; stipules with long *slender points* 14

Leaflets *never* >3 times as long as broad, obcordate to narrowly obovate; stipules broad, sometimes *obtusish* 13

13. Head *globular*, on long slender naked peduncle; flowers *few*, shortly stalked; calyx-teeth about 3 times as long as the *villose* tube, rigid, *triangular*, often blackish internally contrasting with the *white-woolly hair-tuft* which almost closes throat; corolla *pink* or *whitish*, about as long as calyx-teeth:

\**T. stellatum* L. *Spec. Plant.* 2: 769 (1753).

*Illust.*: Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 181 (1957); Butcher, *New Ill. Brit. Flora* 1: 584 (1961); Coste, *Flor. Franc.* 1: fig. 914 (1901); Reichenbach, *Icon. Flor. germ.* 22: t. 92, col. (1867-89).

*Vern.*: Star Clover. *Distr.*: CR—also W.A., S.A., Tas. (Flinders Id).

—As for the last, but *subsessile* flowers rather *numerous* (20-40) and ciliate bristle-like teeth of calyx to *twice* the length of its *glabrous* tube:

\**T. lappaceum* L. *Spec. Plant.* 2: 768 (1753).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 22: t. 91 fig. I, col. (1867-89); Coste, *Flor. Franc.* 1: fig. 915 (1901).

*Vern.*: Bristly or Burdock Clover. *Distr.*: C (Kaniva district)—also S.A.

—Head *ovoid to cylindric*, on stout shortish peduncle; flowers *numerous*, sessile; calyx-teeth to twice the length of villose tube, *setaceous*, pliable, the throat *not* closed by a hair-tuft; corolla *crimson*, much longer than calyx:

\**T. incarnatum* L. *Spec. Plant.* 2: 769 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 11 n. 3, 24 (1939); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 180 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 163 fig. 1 col., 1329 & 1330 (1923); Curtis's bot. Mag. 10: t. 328, col. (1796); Coste, *Flor. Franc.* 1: fig. 907 (1901).

*Vern.*: Crimson Clover. *Distr.*: C (Dimboola)—also W.A., S.A., Tas., N.S.W., N.Z.

14. Leaflets *acute*, 2-5 cm. long; heads cylindrical, 3-8 cm. long; corolla slightly *longer* than calyx-teeth which are rigid, widely spreading and almost *burr-like* in fruit (stiff  $\pm$  robust annual with ribbed stems):

\**T. angustifolium* L. *Spec. Plant.* 2: 769 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 629 (1948); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 182 (1957); Taubert, *Natürl. PflFam.* III 3: 248 (1894); Reichenbach, *Icon. Flor. germ.* 22: t. 93 fig. I, col. (1867-89); Coste, *Flor. Franc.* 1: fig. 909 (1901).

*Vern.*: Narrow-leaf Clover. *Distr.*: BCDGJLMNRST—also W.A., S.A., Tas., N.S.W., A.C.T.

—Leaflets  $\pm$  *obtus*e, often emarginate at apex, <2 cm. long; heads ovoid to oblong, of delicate lavender colour, <2 cm. long; corolla *much shorter* than the soft, finely setaceous calyx-teeth (slender annual, seldom 1 ft. high):

*T. arvense* L. *Spec. Plant.* 2: 769 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 25 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 628 (1948); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 6: 174 (1957); Ross-Craig, *Drawings Brit. Plants* 7: t. 29 (1954); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>a</sup>: t. 163 fig. 2, col. (1923); Reichenbach, *Icon. Flor. germ.* 22: t. 95, col. (1867-89); Burbidge, *Flor. Aust. Cap. Terr.* fig. 209 (1970); Everard, *Wild Flowers World* t. 10, col. fig. c (1970).

\**L. hispidus* Desf. *Tabl. Bot. Must. Hist. nat.* 190 (1804).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 40 (bottom) (1939); Ross-Craig, *Drawings Brit. Plants* 7: t. 47 (1954); Strudwick, *Further Ill. Brit. Plants* fig. 131 (1930); Reichenbach f., *Icon. Flor. germ.* 22: t. 132 fig. iii & iv, col. (1867-89).

*Vern.*: Hairy Bird's-foot Trefoil (Boyd's Clover). *Distr.*: Native to Mediterranean region and S. England; introduced in N.Z., Tas., S.A., W.A. and Victoria, where chiefly scattered in coastal regions (Lorne, Narre Warren, Mornington Penins., Foster, Nowa Nowa district, Cann R., Mansfield)—KPSTWZ.

—Peduncle not or only slightly exceeding leaves; standard  $\pm$  elliptic; pod extremely slender,  $15-25 \times 1$  mm., 4-6 times as long as calyx:

\**L. angustissimus* L. *Spec. Plant.* 2: 774 (1753).

*Illust.*: Morgan, *Clovers & Allied Species* (Dep. Agric. Vict.) fig. 40 (top) (1939); Ross-Craig, *Drawings Brit. Plants* 7: t. 46 (1954); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 267 (1931); Strudwick, *Further Ill. Brit. Plants* fig. 130 (1930); Reichenbach f., *Icon. Flor. germ.* 22: t. 132 fig. i, col. (1867-89).

*Vern.*: Slender Bird's-foot Trefoil. *Distr.*: Native to Eurasia and N. Africa; introduced in S. Afr., N. Amer., N.Z., S.A., W.A. and Victoria, where apparently introduced about 1945 and now occasional at Bacchus Marsh, Woodside near Yarram, and Newry near Maffra—NST.

[The Mediterranean *L. tetragonolobus* L. (Winged Pea) was recorded as naturalized in Victoria in 1887, and Williamson included it in Ewart's *Flor. Vict.* 645 (1931); but the only confirmatory Victorian specimen would seem to be one from C. Walter's herbarium labelled "St Albans, Oct. 1898". Since the species has apparently not re-appeared this century, it is omitted from the present work. *L. tetragonolobus* is a decumbent hairy annual with broad leaflets (1-3 cm. long, 1-flowered peduncles, showy scarlet to purplish flowers (2-3 cm. long) and large, boldly 4-winged pods (4-8 cm.  $\times$  6-8 mm.).

Also in the tribe *Loteæ*, the European and North African perennial *Anthyllis vulneraria* L. (Kidney Vetch or Ladies' Fingers) was recorded as naturalized by Williamson *l.c.* 645 (1931). Localities were given as Lilydale (1912) and Dargo (1922), but no subsequent Victorian records or collections appear to have been made and the species is now considered merely a casual (not an established) alien in the State; it has recently been noted (1956) as "occasional in pastures" of Tasmania. *A. vulneraria* is herbaceous, pubescent, up to 2 ft. high, with many yellow or reddish flowers crowded into 1-3 heads on a stout common peduncle. The genus differs from *Lotus* in having pinnate leaves (with more than 5 leaflets) and an inflated calyx that encloses the flattened 1- to 3-seeded pod. Mediterranean *A. barba-jovis* L. (Jupiter's-beard) is a silvery-hairy perennial with whitish flowers, sometimes grown as a garden ornamental.]

## Tribe GALEGEÆ

### INDIGOFERA L. (1753)

*I. australis* Willd. *Spec. Plant.* 3: 1235 (1802).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 384, col. (1968); Mercer in Hurst, *Poison. Plants N.S.W.* 163 (1942); Hope in Bailey &

Gordon, *Plants poison. & injur. to Stock* t. opp. 19 (1887); *Edwards's bot. Reg.* 5: t. 386, col. (1819); Burbidge, *Flor. Aust. Cap. Terr.* fig. 217 (1970).

*Vern.*: Australian Indigo. *Distr.*: Widespread throughout cooler hilly districts of Victoria, from Lower Glenelg R. to the N.S.W. border (absent from Mallee and northern plains). DEHJKMNPRSTVWZ—also all States & A.C.T.

*Diagn.*: Undershrub (1-2 ft.) to tall shrub (8 ft.); leaves pinnate, with 9-21  $\pm$  elliptical leaflets each 0.5-1" long; flowers in slender axillary racemes usually shorter than leaves, pale to bright lilac, appearing October-December; pod cylindrical, glabrous, 1-2" long, with 5-10 truncate seeds.

[The var. *signata* F. Muell. ex Benth. *Flor. aust.* 2: 200 (1864) is a remarkable and very distinctive population, having rather congested leaves with *very small, obcordate to cuneate leaflets in distant pairs*, the prominent *dark stipellary glands giving a banded appearance* to the common midrib; racemes are correspondingly short. This variety is restricted to drier north-eastern parts of Victoria (Warby Ra., Mayday Hills near Eldorado, Granya, Tallandoon), extending also into New South Wales and reaching southern Queensland. It was raised to specific rank by Domin in *Bibl. bot., Stuttgart* 89: 192 (1926).]

### PSORALEA L. (1753)

1. Leaves congested, pinnate, with 3-5 pairs of narrow-linear leaflets; flowers clear blue, axillary and not exceeding the leaves, the standard 7-10 mm. wide (erect woody shrub, 6-12 ft. high):

\**P. pinnata* L. *Spec. Plant.* 2: 762 (1753).

*Illust.*: Adams in Connor, *Bull. N.Z. Dep. sci. industr. Res.* 99: fig. 18 A & B (1951); Smith, *Gdnrs' Chron.* ser. 3, 33: 301 fig. 120 (1903).

*Vern.*: Bloukeur (Pinnate Scurf-pea). *Distr.*: Native to South Africa; introduced in N.Z., N.S.W., W.A., and along parts of the Victorian coast (naturalized in Portland district, also collected occasionally at Hopkins River, Lower Gellibrand, Mornington and Foster, and not uncommon as a garden shrub in the Greater Melbourne area)—EKPT.

- Leaves not congested (often distant), 3- to 5-foliolate; flowers in spikes, heads or long racemes, the standard <6 mm. wide (low, straggling,  $\pm$  herbaceous perennials) 2
- 2. Leaflets 3, irregularly toothed, the terminal one  $\pm$  remote from lower two (Mallee plants) 4
- Leaflets 3-5 (rarely 7), entire, all equidistant and digitate on petiole 3
- 3. Calyx densely white-pubescent, sessile and not tapering toward base, the lobes much shorter than tube; corolla lilac or almost white, very small, only slightly exceeding calyx; pod covered with scattered flat, greenish tubercles  $\pm$  masked by a dense white pubescence (leaflets 3; flowers in contracted spikes 1-2 cm. long):

*P. parva* F. Muell. in *Trans. phil. Soc. Vict.* 1: 40 (1855).

*Vern.*: Small Psoralea (Small Scurf-pea). *Distr.*: Restricted in Victoria to grassland formations of the west (Wimmera, Inverleigh, Lara-Werribee area, Rochester), Goomalibee near Benalla and central Gippsland (Sale district) but rare. CHMNPRTX—also N.S.W., A.C.T., S.A.

—Calyx with much *shaggy*, *black* or (less often) *white* hair, tapering below into a *distinct pedicel* (sometimes  $\frac{1}{2}$  the length of calyx), the lobes *as long as* or longer than tube; corolla *rosy-purple* (rarely *white*), manifestly *exceeding calyx*; pod *black*, extremely and *sharply rugose*, otherwise *glabrous* (montane plants; leaves with 3 broadish acuminate leaflets, each 1-2" long):

*P. adscendens* F. Muell. in *Trans. phil. Soc. Vict.* 1: 40 (1855).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 216 (1970).

*Vern.*: Mountain Psoralea (Dusky Scurf-pea). *Distr.*: Not uncommon along water-courses and moist forested slopes of the eastern highlands in Victoria (Ovens, Mitta Mitta, Upper Murray, Snowy, Tambo, Mitchell & Dargo Rivers, Gelantipy etc.), also at Axedale and Hawkesdale. EMRSVWZ—also N.S.W., A.C.T., S.A. (far south-east), Tas. (north-west coast).

[The isolated Hawkesdale population has leaflets <1" long and flower-spikes <2 cm. The taxonomic boundary between *P. adscendens* and *P. tenax* in Victoria is rather hazy, and emphasizes the need for a competent revision of all Australian *Psoralea* species, some of which remain very inadequately known and described. In the light of such an investigation, the present concept of Victorian representatives would probably need to be modified.]

—As for last, but lowland plants (of grasslands) with hairs on calyx paler and shorter, corolla bluish, and *some or all* the leaves with 5 (rarely 7 or only 3) leaflets which seldom exceed 1" (if longer, then very narrow):

*P. tenax* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 9 (1838).

*Illust.*: White, *Qd Agric. J. new ser.* 13: 117 t. 6 (1920).

*Vern.*: Tough Psoralea (Tough Scurf-pea, Emu Grass). *Distr.*: Scattered in grassland and savannah formations of northern, far eastern and south-central Victoria (Far north-west Mallee, Kerang, Gunbower, Omeo, Tubbut and Keilor basalt plains near Melbourne where now rare). AFGLNW—also N.S.W., Qd.

4. Leaflets mostly <1" long, *broadly ovate* to almost rotund, softly and often densely *hairy all over* so as to appear *white or hoary*; flowers purplish, in a *dense spike*, the naked part of which is often *shorter than* subtending leaf; calyx white-villous, 6-10 mm. long, *slightly exceeded* by the corolla:

*P. eriantha* Benth. in *Mitch. J. Exped. trop. Aust.* 131 (1848).

*Vern.*: Woolly Psoralea (Woolly Scurf-pea). *Distr.*: Not uncommon on inundated soils along the Murray R. in N.W. Victoria (from the Far north-west at Boundary Point to Swan Hill and Hopetoun, including Kulkyn Nat. Forest). ABFG—also all States except Tas.

[A population with densely *white-tomentose* and much more strongly veined leaflets is almost co-extensive with typical *P. eriantha* and may represent either a distinct variety or an undescribed species.]

—Leaflets mostly 1" long or more, *ovate-lanceolate* to narrow-oblong, minutely pubescent and appearing *greenish*; flowers pink or purple in a *long* but

rather *dense* raceme, the naked part of which *far exceeds* the subtending leaf; calyx 4-5 mm. long, *dingy* from a varying admixture of blackish hairs, the lowest tooth *hardly longer than* the other 4; corolla about *as long again* as calyx:

*P. patens* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 8 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 642 (1948); Chippendale, *Wildflowers Cent. Aust.* 37, col. (1968).

*Vern.*: Spreading Psoralea (Spreading Scurf-pea). *Distr.*: In Victoria known with certainty only from Lake Albacutya (N.W. Mallee). B—also inland parts of all States except Tas.

—As for last, but raceme *loose* and very slender, calyx *hoary* and only 2-3 mm. long, the lowest tooth *longer than* other 4:

*P. cinerea* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 66 (1838).

*Illust.*: White, *Qd Agric. J.* new ser. 10: 253 t. 31 (1918).

*Vern.*: Hoary Psoralea. *Distr.*: In Victoria known only from Lake Coorong near Hopetoun (Mar. 1963) and Psyche Bend on the Murray R. east of Irymple (May 1956). AB—also inland parts of all States except Tas.

#### SWAINSONA Salisb. (1806)

[Major key characters adapted from revision of genus by Alma T. Lee in *Contr. N.S.W. Herb.* 1<sup>4</sup>: 131-271 (July 1948)]

1. Plants *hoary* or *pubescent*, always with some hairs on the leaf-surfaces *other than* on the margins or veins; stipules *strongly decurrent* on the stems and usually *overlapping* (when the leaves are crowded) 3  
Plants quite *glabrous*, or at most with some hairs around the margins or on the mid-rib of each leaflet; stipules neither long-decurrent *nor* overlapping; mature pods 15-25 mm. long 2
2. Plant *rather robust*, *erect* or ascending; leaflets 5-8 mm. wide; flowers about 15-20 per raceme, *yellow* or sometimes *purplish* on the wings; standard 10-12 mm. long, *without calli* (rare plant of far north-west Mallee):

*S. laxa* R. Br. in Sturt *Narr. Exped. Cent. Aust.* 2: App. 76 (1849).

*Illust.*: Lee, *Contr. N.S.W. Herb.* 1: 164 fig. 4 (1948).

*Vern.*: Yellow Swainson-pea (Straggling Swainson-pea). *Distr.*: Scattered through more northern mallee scrubs of Victoria and rare (Walpeup, Ouyen, Kulkyn Nat. Forest, Kooloonong near Annuello, Manangatang); also S.A., ? N.S.W. (extreme south-west).

—Plant *slender*, usually *decumbent*; leaflets 1-4 mm. wide; flowers 4-6 (rarely to 12) per raceme, *mauve to purplish*; standard 6.5-11.5 mm. long, with 2 small *plate-like calli* above the claw (rare mountain plant of the Grampians):



*S. brachycarpa* Benth. *Flor. aust.* 2: 217 (1864).

*Illust.*: Lee, *Contr. N.S.W. Herb.* 1: 160 fig. 2 (1948).

*Vern.*: Slender Swainson-pea. *Distr.*: Restricted in Victoria to the Grampians where rare and known by only 3 collections—Mt. William (Nov. 1871), "Grampians" (1891), Hall's Gap (Dec. 1912); also N.S.W. (north-eastern), Qd.

3. Ovary hoary or pubescent (all over or in part) 5  
Ovary entirely glabrous 4
4. Shrub-like herbaceous perennial to 6 ft. high; leaflets 6-25 mm. long, glabrous above but  $\pm$  woolly-hairy on the under-sides; flowers >12 mm. long, bright mauve or lavender; standard with plate-like calli (very rare riparian plant of far north-west Victoria):

*S. greyana* Lindl. in *Edwards's bot. Reg.* 32: t. 66, col. (1846).

*Illust.*: Lindley (*l.c.*); Reeves in Pescott, *Native Flowers Vict.* t. opp. 35 (1914); Black, *Flor. S. Aust.* ed. 2: fig. 644 (1948); Mercer in Hurst, *Poison. Plants N.S.W.* 190 (1942).

*Vern.*: Hairy Darling Pea. *Distr.*: Very rare in Victoria, where confined to the extreme north-west (along the Murray R. at Lindsay Id—below Ned's Corner); S.A., N.S.W., ?Qd.

—Procumbent herb <1 ft. high; leaflets 2-7 mm. long, distinctly pubescent on both surfaces; flowers 4-7 mm. long, violet-blue to purple; standard without calli (frequent plant of sandy flats along the Murray Valley below Echuca):

*S. microphylla* A. Gray in *U.S. explor. Exped. (Bot.)* 1: 410 (1854).

*Illust.*: Lee, *Contr. N.S.W. Herb.* 1: 258 fig. 52-56 (1948).

*Vern.*: Small-leaf Swainson-pea. *Distr.*: In Victoria not uncommon on sand-hills and inundated sandy flats along the Murray Valley, from the extreme north-west upstream to Echuca (Mildura, Kulkyne Nat. Forest, Lower Campaspe R. etc.); all States except Tas., N. Terr.

[According to Mrs. A. T. Lee, in *Contr. N.S.W. Herb.* 1: 252 (1948), "a polytypic species of six races differing in characters of pubescence, leaflet number and shape, and of style tip". Victorian populations are apparently all referable either to subsp. *tomentosa* A. T. Lee (*l.c.* 259), having a dense pubescence of stiffly spreading hairs, or to subsp. *minima* A. T. Lee (*l.c.* 259) with short close-appressed hairs and very small leaflets (only 1.5-4 mm. long).]

5. Ovary pubescent along the suture only (sometimes only at the very base); leaflets narrow- to very narrow-elliptical, usually 1-2 cm. long; raceme 4-10" long, with 10-20 flowers; flowers purple or bluish, 5-9 mm. long, often hanging vertically along the peduncle; pod 7-11 mm. long (uncommon, slender and rigidly erect plant of north-eastern Victoria):

*S. recta* A. T. Lee in *Contr. N.S.W. Herb.* 1: 250 fig. 51, 251 (1948).

*S. monticola* sens. Ewart *Flor. Vict.* 673 (1931), atque auctt. plur., non A. Gunn. ex Benth. (1864) sens. strict.

*Illust.*: Lee (*l.c.*); Maiden, *Ill. N.S.W. Plants* 3: t. 27 (1911), as *S. monticola*.

*Vern.*: Mountain Swainson-pea. *Distr.*: Scattered through the lower hills of north-eastern Victoria (Murchison East, Tamleugh near Violet Town, Benalla, Wangaratta district, Tallangatta, Wodonga and Upper Murray R.); also N.S.W. (central and southern Western Slopes) & A.C.T.

—Ovary hoary or pubescent *all over*; prostrate to  $\pm$  ascending plants 6

6. Keel *straight* or only slightly twisted sideways; flowers bluish to dark purple 10

Keel either *spirally coiled* or *distinctly twisted* to one side 7

7. Hairs *centrifixed*; flowers *pink or mauve*, the standard sometimes striped with red, 3-8 per raceme; pod 1.5-3.5 cm. long (plant of damp ground near water-courses in Mallee and Wimmera):

*S. murrayana* Wawra in *Öst. bot. Z.* 31: 69 (1881).

*S. morrisiana* J. M. Black in *Trans. roy. Soc. S. Aust.* 50: 283 (1926).

*Illust.*: Lee, *Contr. N.S.W. Herb.* 1: 220 fig. 32 & 33 (1948); Wawra, *Itin. Princ. Saxe-Coburgi* 1: t. 1 fig. A (1883).

*Vern.*: Murray Swainson-pea. *Distr.*: Occasional on inundated flats and around lakes in northern and western Victoria (Wannon, Wimmera & Richardson Rivers, Murtoa, Lake Buloke, Swan Hill, Kerang, near Chiltern); S.A., N.S.W. (Riverina to New England).

—Hairs *basifixed* (or laterally attached at one end); flowers red, purple or blue 8

8. Keel *coiled in a complete circle*, prominent and *yellow-tipped*; standard 17-27 mm. wide (broader than long), with a *deep apical notch*, clear blue to purplish, the basal calli consisting of 2 prominent, *thickened and divergent lines* (frequent on damp ground through northern and western Victoria, the flowers closely resembling those of a garden sweet-pea):

*S. procumbens* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 3: 46 (1862).

*Cyclogyne procumbens* F. Muell. in *Linnaea* 25: 393 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 250, col. (1968); Lee, *Contr. N.S.W. Herb.* 1: 226 fig. 36 (1948); Galbraith, *Wildflowers Vict.* ed. 3: t. 78 (1967); Henderson, *Ill. Bouquet* 3: t. 69 (1861-4), as *S. violacea*; *Floral Mag.* 2: t. 106 (1862), as *S. violacea*; Swaby in *Your Garden* 9<sup>6</sup>: 31 (June 1956).

*Vern.*: Broughton Pea (Pretty Swainson-pea). *Distr.*: Frequent in clay depressions subject to flooding almost throughout western, north-western and northern Victoria (e.g. Nhill, Dimboola, Hopetoun, far north-west, Donald, Bealiba-St. Arnaud district, Nathalia, Nagambie, Benalla, St. James); inland parts of all States except Tas., but apparently localized and rare in Qd (south-western) and W.A. (Mt. Barker).

—Keel *incompletely coiled*, not yellow-tipped; standard usually <20 mm. wide, the calli *absent* or poorly developed 9

9. Flowers *blue to purplish*, 6-15 per raceme; keel *spirally coiled*; style-beard *ventral* (facing ovary):

*S. swainsonioides* (Benth.) A. T. Lee ex J. M. Black *Flor. S. Aust.* ed. 2: 470 (1948).

*Cyclogyne swainsonioides* Benth. in Mitch. *J. Exped. trop. Aust.* 397 (1848);

*S. oncinotropis* F. Muell. in *Aust. Chem. & Drugg.* 7: 45 (1884).

*Illustr.*: Lee (*l.c.* 224 fig. 35); Black, *Flor. S. Aust.* ed. 2: fig. 645 (1948).

*Vern.*: Downy Swainson-pea. *Distr.*: Not uncommon on heavier clay soils of plains in north-western Victoria, except the far north-west Mallee (Dimboola-Horsham district, Richardson R., Donald, Wycheproof); N.S.W., Qd, S.A.

—Flowers *red to violet*, 2-5 per raceme; keel *turned sideways*, the tip sharply incurved and *scythe-shaped*; style-beard *dorsal* and facing away from ovary (very rare plant of lower Campaspe and Murray valleys):

*S. plagiotropis* F. Muell. *Fragm. Phyt. Aust.* 9: 153 (1875).

*Illustr.*: Lee, *Contr. N.S.W. Herb.* 1: 223 fig. 34 (1948); Maiden, *Ill. N.S.W. Plants* 3: t. 29 (1911), excl. fig. F.

*Vern.*: Red Swainson-pea. *Distr.*: Apparently endemic in northern Victoria near the Murray R., where very rare and known by only 3 collections—from Lower Campaspe R. (Oct. 1875, the type), Kerang (Sept. 1925), Murray Valley Highway 17 miles west of Echuca (Oct. 1956)—but possibly crossing the Murray into N.S.W.

10. Plant of coastal sand-hills; leaflets *glabrous above*; flowers 10-20, in a raceme at least 4" long:

*S. lessertiifolia* DC. in *Ann. Sci. nat., Bot. sér. 1*, 4: 99 (1825).

*Illustr.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 291, col. (1968); Maiden, *Ill. N.S.W. Plants* 3: t. 30 (1911); Lee, *Contr. N.S.W. Herb.* 1: 185 fig. 14 (1948); Lee, *Wild Life* 9: 329 (1947).

*Vern.*: Coast Swainson-pea (Purple Swainson-pea, Poison Pea, Poison Vetch). *Distr.*: Frequent on sand-hummocks along the Victorian coast, from the South Australian border to Wilson Prom. (e.g. Portland, Port Fairy, Cape Otway, Anglesea, Mornington Penins., Phillip Id), extending up the Glenelg R. to near Casterton; S.A., Tas. (far north-west and Bass Strait islands), recorded also for N.S.W. but very doubtfully present.

—Plants of the inland; leaflets *hairy on both surfaces*; flowers <10 (sometimes only 1-3), in a short and often umbel-like raceme 11

11. Standard with *plate-like calli*; style-tip *straight*; hairs *centrifixed*:

*S. phacoides* Benth. in Mitch. *J. Exped. trop. Aust.* 363 (1848).

*Illustr.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 170, col. (1968); Lee, *Contr. N.S.W. Herb.* 1: 175 fig. 10 (1948); Black, *Trans. roy. Soc. S. Aust.* 57: t. 9 fig. 4 (1933), as *S. uniflora*; Myers in Turner, *Forage Plants Aust.* t. opp. 22 (1891).

*Vern.*: Dwarf Swainson-pea. *Distr.*: In Victoria restricted to the Murray Valley on soils subject to flooding, and not uncommon (Mildura, Lake Hattah, Swan Hill, Gunbower, Lower Campaspe R., very doubtfully also from Bendigo district); inland parts of all States except Tas., N. Terr.

—Standard *without calli*; style-tip *geniculate*; hairs *often basifixed*:

*S. oroboides* F. Muell. ex Benth. *Flor. aust.* 2: 222 (1864).

*Illust.*: Lee, *Contr. N.S.W. Herb.* 1: 199 fig. 21-24 (1948); Maiden, *Ill. N.S.W. Plants* 3: t. 28 (1911), as *S. tephrotricha*; Myers in Turner, *Forage Plants Aust.* t. opp. 24 (1891); Burbidge, *Flor. Aust. Cap. Terr.* fig. 218 (1970); Leigh & Mulham, *Pastoral Plants Riverine Plain* 88, col. (1965).

*Vern.*: Variable Swainson-pea. *Distr.*: Widely distributed and not uncommon in drier parts of Victoria, especially on grassland and savannah-woodland formations (e.g. Wimmera, far north-west Mallee, Kerang, Donald, Bendigo, Craigie, Beaufort, Skipton, Lara, Nathalia, Wodonga, Tallandoon, Upper Murray and Wulgulmerang-Suggan Buggan districts); inland parts of all States except Tas., A.C.T., N. Terr.

As remarked by A. T. Lee [*Contr. N.S.W. Herb.* 1: 194 (1948)], *S. oroboides* is "a widely distributed polytypic species in which a number of variants have achieved a considerable degree of discreteness"

Of the four subspecies recognized by Mrs. Lee, three occur widely in Victoria and may be distinguished as follows—

Hairs rather long,  $\pm$  centrifixed, those on calyx a mixture of light and dark grey; leaflets oblanceolate to narrow-elliptical:

subsp. *sericea* A. T. Lee (*l.c.* 201).

—Wimmera, Murray and Goulburn Valleys.

[In Eichler's *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 193 (1965), this taxon was raised to specific rank, as *S. sericea* (Lee) J. M. Black ex Hj. Eichler.]

Hairs loosely appressed to curved-spreading, basifixed or laterally attached at one end, those on calyx white or brown or mixed; leaflets oblanceolate to narrow-oblong:

subsp. *reticulata* (J. M. Black) A. T. Lee (*l.c.* 198).

*S. reticulata* J. M. Black in *Trans. roy. Soc. S.*

*Aust.* 48:255 (1924).

—Murray Valley and N.E. Victoria.

Hairs sparse, curved-spreading, basifixed or laterally attached at one end, those on calyx dark brown; leaflets narrow-lanceolate:

subsp. *hirsuta* (J. M. Black) A. T. Lee (*l.c.* 200).

*S. oroboides* var. *hirsuta* J. M. Black *Flor. S. Aust.* 320 (1924);

*S. behriana* F. Muell. ex J. M. Black in *Trans. roy. Soc. S. Aust.* 51: 379 (1927).

—widespread on grassland and savannah formations of northern, western and central Victoria (including the basalt plains west of Port Phillip).

#### GLYCYRRHIZA L. (1753)

Leaflets <1 cm. wide, shortly *mucronate*; flowers pale lilac, racemose; calyx 2-3 mm. long, pale,  $\pm$  *ventricose* at base; pod *ovoid*, 5-6 mm. long, covered with straight or hooked *prickles*; seed solitary, reniform, greenish:

**G. acanthocarpa** (Lindl.) J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 351 (1919).

*Indigofera acanthoscarpa* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 17 (1838)—*etymol. orig.*

*Illustr.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 48 (1886), as *G. psoraloides*; Schönfeld in Mueller, *Plants Colon. Vict.* 1 (Lithogr.): t. 26 (1864-5), as *Psoralea acanthocarpa*.

*Vern.*: Southern Liquorice (Native Liquorice). *Distr.*: North-western and western Victoria, on heavy soils prone to inundation (Nhill, Goroke, Natimuk, Horsham & Warracknabeal in the Wimmera, Mildura, Kulkyn Nat. Forest, Lake Boga, Hopetoun, Wycheproof, Pyramid Hill); inland parts of all States except Tas., but seldom common.

Leaflets 1 cm. wide or more, broadly elliptical,  $\pm$  *retuse* at apex; flowers lilac, in slender racemes; calyx 4-6 mm. long, dingy, *tapering* toward base; pod *linear*, >10 mm. long, *glabrous*, with 3-5 seeds:

\***G. glabra** L. *Spec. Plant.* 2: 742 (1753).

*Illustr.*: Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>o</sup>: fig. 1455 (1924); Reichenbach f., *Icon. Flor. germ.* 22: t. 177 fig. I & II, col. (1867-89).

*Vern.*: Liquorice. *Distr.*: Native to southern Europe and central Asia; occasionally cultivated in Victoria and persisting as an escape in Horsham, Rochester, Echuca and Yarrawonga districts.

[Four other representatives of the tribe *Galegeæ* have appeared as occasional introductions in Victoria, but seem neither to be spreading nor thoroughly established, viz.: *Astragalus hamosus* L. (Milk Vetch or Hook-pod), a small yellowish-flowered annual with pubescent foliage and curved cylindrical pods (1-2" long), was found in a garden at Geelong (Nov. 1946) and is already recorded as a naturalized alien for New South Wales, Queensland and South Australia; *Galega officinalis* L. (Goats' Rue or French Lilac), a stout, glabrous, pinkish-flowered perennial 2-5 ft. high, was collected at Ruffy near Gobur in Feb. 1915; *Robinia pseudoacacia* L. (Black Locust or False Acacia), a thorny spreading tree (to 50 ft. high) with dark furrowed bark, fragrant white flowers and flat reddish pods 3-4" long, is drought-resisting and often grown for ornament in various parts of Victoria where it may tend to persist by suckering (it is recorded as naturalized in New South Wales); *Sutherlandia frutescens* (L.) R. Br. (Bladder Senna, Cancer Bush or Duck Plant), a hoary tender shrub (1-3 ft.) with large, showy, scarlet flowers and hyaline inflated pods (about 2  $\times$  1"), has escaped occasionally from Victorian gardens and is considered naturalized in South Australia—E. G. Rice provides an admirable coloured illustration of it in her *Wild Flowers Cape G.H.* t. 38 (1951). The first two species are both native to southern Europe and western Asia, *Robinia* to the eastern United States and *Sutherlandia* to South Africa.]

## Tribe HEDYSARÆ

### \*ORNITHOPUS L. (1753)

Plant *glabrous* or almost so; flower-cluster *naked*; calyx-teeth *broadish*, acute,  $\pm$  1 mm. long; corolla *bright yellow*, veined with red; pod *slender* (<2 mm. wide), *not* or only slightly constricted between the seeds:

\**O. pinnatus* (Mill.) Druce in *J. Bot., Lond.* 45: 420 (1907).

*Scorpiurus pinnata* Mill. *Gdnrs Dict.* ed. 8: n. 5 (1768).

*Illust.*: Fitch, *Ill. Brit. Flor.* ed. 5: fig. 274 (1931); Coste, *Flor. Franc.* 1: fig. 1066 (1901), as *O. ebracteatus*.

*Vern.*: Sand Bird's-foot. *Distr.*: Native to the Mediterranean region, Britain, Madeira, Azores; introduced in New Zealand, and apparently naturalized on the Mornington Peninsula, Vic. (at Langwarrin, Somerville and Tyabb).

Plant *silky-hairy*; flower-cluster subtended by a *sessile pinnate bract*; calyx-teeth *setaceous*, 2-3 mm. long; corolla *whitish*, streaked with mauve; pod 2-3 mm. wide, *strongly constricted* between the seeds:

\**O. sativus* Brot. *Flor. lusit.* 2: 160 (1803).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 4\*: fig. 1512 d, 1513 (1924); Reichenbach f., *Icon. Flor. germ.* 22: t. 180, col. (1867-89).; Everard, *Wild Flowers World* t. 29 fig. c, col. (1970).

*Vern.*: Serradella. *Distr.*: Native to Mediterranean region; introduced in Central Europe, and collected in Victoria at Lower Tarwin, Gippsland (Nov. 1945), but doubtfully an established alien.

[The European *O. perpusillus* L. is very similar to *O. sativus*, but has shorter peduncles and *much smaller* flowers; it is recorded as naturalized in New South Wales and New Zealand. *O. compressus* L., differing from *O. sativus* in its yellow flowers and larger beaked pods, is a Mediterranean species that appeared at Wangaratta North (Vic.) in Dec. 1965.]

### \*ALHAGI Gagnebin (1755)

\**A. camelorum* Fisch. *Cat. Jard. Plant. Gorenki* ed. 2: 72 (1812).

*Illust.*: Janish in Abrams, *Ill. Flor. Pacific States* 2: fig. 2925 (1944); Black, *Flor. S. Aust.* ed. 2: fig. 652 b (1948).

*Vern.*: Camel Thorn. *Distr.*: Native to Asia Minor and from southern Russia to north-western India; introduced in N. Amer., S.A. and northern Victoria where chiefly confined to irrigation settlements of the Murray Valley (Red Cliffs, Kerang, Echuca, Rochester, Kyabram-Tongala and Rutherglen-Chiltern districts)—proclaimed as a noxious weed in both States.

*Diagn.*: Small glabrous rigid shrub (1-3 ft.) with divaricate spiny branchlets; leaves simple, small scattered; flowers shortly pedicellate, mostly solitary and scattered; calyx 3-4 mm. long, with short blunt teeth; corolla purplish, 8-10 mm. long, the standard almost orbicular; pod terete, much constricted between the 2-4 globular seed-bearing particles which do not break apart.

### DESMODIUM Desv. (1813)

Leaflets rarely >1 cm. wide; flowers pink, 3-4 mm. long, in very *remote pairs* on a slender raceme (sometimes reduced to 1-3 flowers); fruiting pedicels *erect or spreading*, much longer than calyx; articles of pod  $\pm$  *triangular* in form (stems weak, usually prostrate):

*D. varians* (Labill.) Endl. in *Ann. Wien. Mus. Naturg.* 1: 185 (1836).

*Hedysarum varians* Labill. *Sert. aust.-caled.* 71, t. 71 (1824-25).

*Illust.*: Labillardière (*l.c.*); Burbidge, *Flor. Aust. Cap. Terr.* fig. 224 (1970).

*Vern.*: Slender Tick-trefoil. *Distr.*: Scattered in forest land and along shaded valleys almost throughout the hilly parts of eastern Victoria (Arthur's Seat, Dandenong Ranges, Kinglake Nat. Park, Jamieson, Broken, King, Ovens, Upper Murray, Genoa & Macalister Rivers, Glenaladale etc.), extending westward to Bacchus Marsh, Castlemaine, Sedgewick and Avoca but rare in these latter districts; also Tas., N.S.W., A.C.T., Qd, N. Caled.

[Most Victorian (and all Tasmanian) populations are referable to the var. *gunnii* (Hook. f., *ut sp.*) Benth. *Flor. aust.* 2: 233 (1864), distinguished by its broadly obovate to almost orbicular (not oblong-linear) leaflets.]

Leaflets 1-3 cm. wide; flowers  $\pm$  5 mm. long, rather *numerous and close* in a long, terminal, rigid raceme; fruiting pedicels *recurved, very short* (no longer than calyx); articles of pod  $\pm$  rotund (stems rigid,  $\pm$  erect):

**D. brachypodum** A. Gray in *U.S. explor. Exped. (Bot.)* 1: 434 (1854).

*Vern.*: Large Tick-trefoil. *Distr.*: In Victoria confined to East Gippsland, usually on sandy ground and rare (Tabberabbera, Bairnsdale district, Suggan Buggan, Upper Snowy R., Deddick R.); also N.S.W., Qd.

#### LESPEDEZA Michx. (1803)

**L. juncea** (L. f.) Pers. *Synops. Plant.* 2: 318 (1807).

*Hedysarum junceum* L.f. *Decas prima Plant.* t. 4 (1762);

*L. cuneata* (Du M. Cours., *ut Anthyllis sp.*) G. Don *Gen. Syst.* 2: 307 (1832).

*Illust.*: Nakai, *Lespedeza of Japan & Korea* 96 & 97 (1927), as *L. cuneata*; Schneider, *Ill. Handb. Laubholz.* 2: 114 fig. 70 (1906), as *L. sericea*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 222 (1970).

*Vern.*: Chinese Lespedeza (Bush Clover). *Distr.*: Scattered through north-eastern and far eastern Victoria, usually on sandy inundated ground along water-courses and often locally abundant (Goulburn, Broken, King, Buffalo, Ovens, Upper Murray and Snowy Rivers, Bete Bolong, Suggan Buggan, Omeo, Corryong, Yackandandah etc.); N.S.W., Qd, S.E. Asia, China, Japan, India, and now naturalized in eastern U.S.A.

*Diagn.*: Herb 1-2 ft. high, with thick perennial rootstock and several stiff, spreading, little-branched stems; leaves crowded, erect, trifoliate, shortly petiolate, glabrous above, hoary or silky-pubescent beneath; leaflets each 8-20 mm. long, narrowly linear-cuneate, with  $\pm$  truncate apex and fine mucro; flowers 6-8 mm. long, pink or lilac-purplish, in dense axillary clusters; corolla slightly exceeding the acuminate calyx-teeth, often rudimentary or absent in flowers of lower clusters; pod sessile, flattened, 2-4 mm. wide, broadly ovate to almost orbicular, minutely pubescent, 1-seeded, indehiscent and falling readily.

[Another member of the tribe *Hedysareæ*, viz. the Mediterranean *Scorpiurus sulcata* L. (Scorpion Plant), was included by Williamson in Ewart's *Flor. Vict.* 644 (1931) on the basis of a single collection made at Delatite R. near Mansfield in 1890. Although recorded as naturalized in 1893, the plant has apparently died out long ago and should be deleted from Victorian floras. It is an almost prostrate, broad-leaved, hairy annual; the flowers are yellow and the curious jointed pods (about 1" long) *coiled*, furrowed and beset with hooked spines. *Hedysarum*

*coronarum* L. (Soola Clover or French Honeysuckle) and *Onobrychis viciifolia* Scop. (Sainfoin) are occasionally grown in Victoria for fodder or ornament, but they do not persist (as in parts of Tasmania). Both are Mediterranean herbs (1-2 ft. high) with crimson or pink flowers in dense conspicuous racemes, the latter species having 1-seeded indehiscent pods and extending to Britain as well as western Asia (including Siberia). European *Coronilla varia* L. (Coronilla or Poison-vetch) was noted in quantity between Rye and Sorrento in Jan. 1969; it is a straggling, glabrous, perennial herb to 2 ft. high, with 11-25 oblong leaflets (1-2 cm. long), pink-and-white capitate flowers on slender axillary peduncles and 4-angled pods with 3-6 narrow joints (each article 5-8 mm. long).]

### Tribe VICIÆ

#### \*VICIA L. (1753)

1. Flowers <10 mm. long (usually 3-5 mm.), *white or pale bluish*, racemose (rarely solitary) on *slender* peduncles; pod <2 cm. long, flat, about 3 times as long as broad (or even broader), with 2-4 seeds (leaflets linear or narrowly oblong) 4  
 Flowers >10 mm. long, *purple and red*, 1 or 2 together on *short* peduncles (or almost sessile); pod 3-6 cm. long, 4-several times as long as broad, with 6-10 seeds 2
2. Calyx-teeth *very unequal*, the longest only 1-2 mm.; fruiting peduncles  $\pm$  20 mm. long; pods *pale*, straw-coloured, flat,  $\pm$  10 mm. wide (flowers *always* solitary; leaves usually narrow-linear):

\**V. monantha* Retz. *Obsns bot.* 3: 39 (1784).

*Illust.*: Coste, *Flor. Franc.* 1: fig. 1013 (1901), as *V. monanthos*.

*Vern.*: One-flower Vetch. *Distr.*: AB (Murray Mallee & Far N.W.).

—Calyx-teeth *subequal*, 4-6 mm. long; fruiting peduncles <10 mm. long; pods usually <10 mm. wide (flowers normally in pairs) 3

3. Pod *flattened*, *pale brown*; leaflets typically obovate and often truncate or notched at apex; flowers 15-20 mm. long:

\**V. sativa* L. *Spec. Plant.* 2: 736 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 647 (above) (1948); Abrams, *Ill. Flor. Pacific States* 2: fig. 2926 (1944); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 170 fig. 3 col., 1553 (1924)—subsp., var. & forma; Coste, *Flor. France.* 1: fig. 992 (1901).

*Vern.*: Common Vetch. *Distr.*: ABCEHJMNPRST—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[Black in *Flor. S. Aust.* ed. 2: 476 (1948) also reports occurrences of plants with the broad leaflets of *V. sativa* but black cylindrical pods exactly as in *V. angustifolia*. These unusual populations may be of mixed parentage, and hybridism between the two species is recorded for New Zealand.]

—Pod *cylindrical*, *blackish*; leaflets linear or narrowly oblong; flowers rarely >15 mm. long (often less):



\**V. angustifolia* L. *Amæn. Acad.* 4: 105 (1759).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 66 (1954); Abrams, *Ill. Flor. Pacific States* 2: fig. 2927 (1944); Burbidge, *Flor. Aust. Cap. Terr.* fig. 213 (1970).

*Vern.*: Narrow-leaf Vetch. *Distr.*: AKNPSTW—also S.A., Tas., N.S.W., N.Z.

4. Leaflets in 3-6 pairs; flowers 1-3, on a *capillary* peduncle; calyx-teeth unequal, *no longer than* tube; pod *glabrous*, usually 4-seeded:

\**V. tetrasperma* (L.) Mœnch. *Meth. Plant.* 148 (1794).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 59 (1954); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>s</sup>: t. 169 fig. 3, col. (1924); Abrams, *Ill. Flor. Pacific States* 2: fig. 2929 (1944).

*Vern.*: Slender Vetch. *Distr.*: CNS—also W.A., S.A., Tas., N.S.W., N.Z.

—Leaflets in >6 pairs; flowers 4-8, on a  $\pm$  stout peduncle, white or very dilute bluish, 3-4 mm. long; calyx *equally* bilabiate, with equal subulate teeth; pod *pubescent*, 2-seeded:

\**V. hirsuta* (L.) S. F. Gray *Nat. Arr. Brit. Plants* 2: 614 (1821).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 7: t. 58 (1954); Abrams, *Ill. Flor. Pacific States* 2: fig. 2928 (1944); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>s</sup>: t. 169 fig. 2, col. (1924); Coste, *Flor. Franc. 1*: fig. 1019 (1901).

*Vern.*: Tiny Vetch. *Distr.*: AJNSZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—As for the last, but flowers *larger* (5-6 mm.), blue, and the calyx *very unequally* bilabiate (with 3 long and 2 short teeth):

\**V. disperma* DC. *Cat. Plant. Hort. bot. monspel.* 154 (1813).

*Illust.*: Coste, *Flor. Franc. 1*: fig. 1018 (1901).

*Vern.*: French Tiny Vetch. *Distr.*: N (Bayswater)—also A.C.T.

[The Eurasian *V. sepium* L. (Bush or Hedge Vetch) was recorded as naturalized in Victoria by Williamson in Ewart's *Flor. Vict.* 675 (1931) on the evidence of a single specimen from Wycheproof (Sept. 1918); but no subsequent collections seem to have been made, and it is very doubtful whether the species now persists anywhere in the State. Black in *Flor. S. Aust.* ed. 2: 476 (1948) mentions occasional appearances in South Australia. *V. sepium* is a trailing perennial with 2-6 rather large flowers in a condensed raceme and with flat, blackish, glabrous, 4- to 10-seeded pods about 1" long. *V. faba* L. is the Broad Bean, cultivated in the Mediterranean region from prehistoric times and occasionally seeding itself in Victorian gardens.]

#### \*LATHYRUS L. (1753)

Stems angular,  $\pm$  1 mm. wide; leaflets *linear*, <5 mm. broad; flower  $\pm$  1 cm. long, *solitary on an awned peduncle*, reddish (slender annual  $\pm$  1 ft. high):

\**L. angulatus* L. *Spec. Plant.* 2: 731 (1753).

*L. sphaericus* sens. Ewart *Flor. Vict.* 676 (1931), atque Black *Flor. S. Aust.* ed. 2: 476 (1948), *non* Retz. (1784).

*Illust.*: Coste, *Flor. Franc.* 1: fig. 1035 (1901); Burbidge, *Flor. Aust. Cap. Terr.* fig. 214 (1970).

*Vern.*: Angular Pea. *Distr.*: N (Harcourt)—also A.C.T., S.A.

Stems quadrangular and *broadly winged*, >4 mm. wide; leaflets *ovate-elliptic*, >10 mm. broad; flowers  $\pm$  2 cm. long, 3-12 in a *raceme*, rosy-purplish to white (robust climbing perennial):

\**L. latifolius* L. *Spec. Plant.* 2: 733 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 4\*: fig. 1584 & 1585 (1924); Coste, *Flor. Franc.* 1: fig. 1053 (1901).

*Vern.*: Everlasting Pea. *Distr.*: Sporadic—also N.Z.

[*L. sativus* L. (Chickling Vetch), an annual food-plant of southern Europe, has appeared occasionally in Victorian crops and was noted along the Moyston road near Ararat in May 1964; it has solitary white or purplish flowers about 15 mm. long, but lacks an awned peduncle, and has been recorded as naturalized in New South Wales. The widely grown Sweet Pea of flower gardens is *L. odoratus* L.—a showy annual of southern Europe.

Two other cultivated (and esculent) members of the tribe *Vicieæ* are *Pisum sativum* L. (Garden, Field or Green Pea) and *Cicer arietinum* (Chick Pea or Black Gram), both annuals from the Middle East, but seldom persisting anywhere in Victoria; the former is very widely grown for food, and differs from *Cicer* in having glabrous paripinnate leaves with well-developed apical tendrils.]

## Tribe PHASEOLEÆ

KENNEDIA Vent. (1804)—etymol. orig.

Habit *prostrate*; branches with *pale* silky hairs; leaflets obovate to  $\pm$  *orbicular*, usually  $\frac{1}{2}$ -1" long, often *wavy* on margins; flowers 1 or 2 together,  $\pm$  1" long; standard *bright scarlet*, *yellow* at base, *broad* (widespread):

*K. prostrata* R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 299 (1812).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 43, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 649 (1948); Ewart, *Flor. Vict.* fig. 267 (1931); Curtis's *bot. Mag.* 8: t. 270, col. (1794), as *Glycine coccinea*; Brooks, *Aust. native Plants* t. inter 96 & 97 (1959).

*Vern.*: Running Postman (Scarlet Coral-pea). *Distr.*: ABCDEHJKMNPRSTWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

Habit *twining and climbing*; branches stout, *brown-villose*; leaflets  $\pm$  *ovate*, 1-3" long, quite *flat*; flowers few, *racemose*,  $\pm$  1.5" long; standard *dull dark red*, *narrow* (E. Gippsland):

*K. rubicunda* (Schneev.) Vent. *Jard. Malm.* 2: 104, t. 104 (1804).

*Glycine rubicunda* Schneev. *Icon. Plant. rar.* 10: t. 29 (1793).

*Illust.*: Ventenat (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 479, col. (1968); Anon, Curtis's *bot. Mag.* 8: t. 268, col. (1794), as *Glycine rubicunda*; Brooks, *Aust. native Plants* t. inter 96 & 97 (1959); Sulman, *Wild Flowers N.S.W.* 1: t. 36 (1913).

*Vern.*: Dusky Coral-pea. *Distr.*: STWZ—also N.S.W., Qd.

## HARDENBERGIA Benth. (1837)

**H. violacea** (Schneev.) Stearn in *J. Bot., Lond.* 78: 70 (1940).

*Glycine violacea* Schneev. *Icon. Plant. rar.* 10: t. 29 (1793);

*H. monophylla* (Vent., ut *Kennedia* sp.) Benth. in Endl. et al. *Enum. Plant.* 41 (1837).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 352, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 650 (1948); Ewart, *Flor. Vict.* fig. 275 (1931), as *H. monophylla*; Maiden, *Flowering Plants & Ferns N.S.W.* t. 20, col. (1896), as *H. monophylla*; *Curtis's bot. Mag.* 8: t. 263, col. (1794), as *Glycine bimaculata*; Brooks, *Aust. native Plants* t. opp. 81 (1959); Rosser, *Flowers Vict.* 9, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 208 (1970).

*Vern.*: Purple Coral-pea. *Distr.*: DJMNPSTVWZ—S.A., ? Tas., N.S.W., A.C.T., Qd.

## \*DOLICHOS L. (1753)

\***D. lignosus** L. *Spec. Plant.* 2: 726 (1753).

*Illust.*: *Curtis's bot. Mag.* 11: t. 380, col. (1797); Freeman, *Bot. Gaz.* 66: 517-22 (1918).

*Vern.*: Common Dolichos. *Distr.*: EKPW—also N.S.W., Qd.

## GLYCINE L. (1753)

1. Leaflets *pinnately arranged* on a common petiole (i.e. terminal leaflet inserted at some distance beyond the equally attached lateral pair); racemes always *loose and slender*. 3  
     Leaflets *all equally attached* at end of petiole. 2
2. Stems elongated and *twining*; leaflets often > 2 cm. long, *oblong-lanceolate to almost linear* (rarely obovate),  $\pm$  *strigose all over* but especially beneath; racemes *loosely flowered*, on peduncles 1-2" long; bractlets *setaceous*; flowers pale mauve or blue to purplish (widespread from sea-level to sub-alps):

**G. clandestina** J. Wendl. *Bot. Beobacht.* 54 (1798).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 457, col. (1958); Hughes in Hermann, *Tech. Bull. U.S. Dep. Agric.* 1268: 12 (1962); Burbidge, *Flor. Aust. Cap. Terr.* fig. 221 (1970).

*Vern.*: Twining Glycine. *Distr.*: CDEHJKMNPSTVWZ—also W.A., S.A., Tas., A.C.T., N.S.W., Qd, Cent. Aust.

[The var. *sericea* Benth. *Flor. aust.* 2: 244 (1864) is a population with silky-pubescent stems and leaves, rusty-villous calyces and very short pedicels; it is almost co-extensive with the more typical form and replaces it in drier country.]

—Stems *prostrate or ascending*; leaflets < 2 cm. long, *obovate to  $\pm$  orbicular*, silky strigose beneath but *glabrous* on upper surface; racemes *compact* (sometimes reduced to 1-4 flowers), on slender peduncles 2-4" long; bractlets *ovate-elliptic*, blunt; flowers usually deep purple (scattered and uncommon, on lowland grassy plains):

*G. latrobeana* (Meissn.) Benth. *Flor. aust.* 2: 244 (1864).

*Zichya latrobeana* Meissn. in Lehm. *Plant. Preiss.* 1: 94 (1844).

*Illust.*: Hughes in Hermann, *Tech. Bull. U.S. Dep. Agric.* 1268: 16 (1962); Fitch in Hooker f., *Flor. Tasm.* 1: t. 17, col. (1855), as *Leptocyamus tasmanicus*.

*Vern.*: Clover Glycine. *Distr.*: DEJMNPSWX—also S.A., Tas., N.S.W., A.C.T.

3. Plant  $\pm$  *strigose to glabrous*; leaflets of lower leaves *broadly obovate to oval*, thin, with venation *conspicuously reticulate*; calyx usually *glabrous*, the 5 teeth equalling or *shorter than* tube; pod *glabrous to slightly hairy* (widespread in open country):

*G. tabacina* (Labill.) Benth. *Flor. aust.* 2: 244 (1864).

*Kennedia tabacina* Labill. *Sert. aust.-caledon.* 70, t. 70 (1825).

*Illust.*: Labillardière (*l.c.*); Hughes in Hermann, *Tech. Bull. U.S. Dep. Agric.* 1268: 20 (1962); Banks & Solander, *Bot. Cook's Voy.* 1: t. 66 (1900).

*Vern.*: Variable Glycine. *Distr.*: DKMNPRVW—also W.A., S.A., N.S.W., A.C.T.

- Plant wholly *silky-strigose and hoary*; leaflets all *narrowly elliptic-lanceolate* to almost linear, *without* reticulate veins; calyx densely covered with  $\pm$  *rusty hairs*, the 5 teeth equalling or slightly *longer than* tube; pod *silky-strigose* (very rare Mallee plant):

*G. canescens* F. J. Hermann in *Techn. Bull. U.S. Dep. Agric.* n. 1268: 19 (1962).

*G. sericea* (F. Muell., ut *Leptocyamus* sp.) Benth. *Flor. aust.* 2: 245 (1864), *non* Willd. (1802).

*Illust.*: Hughes in Hermann, *Tech. Bull. U.S. Dep. Agric.* 1268: 18 (1962).

*Vern.*: Silky Glycine. *Distr.*: FG—also inland tracts of all States except Tas., and in Cent. Aust. & N. Terr.

### Family GERANIACEÆ

1. Flowers *zygomorphic*, the 2 upper petals differently shaped and mostly *larger* than the 3 lower ones; uppermost sepal produced downwards into a *nectary-spur adnate to the pedicel*; awns of fruit long-villous inside, twisting spirally at dehiscence *Pelargonium* (p. 313)
2. Flowers quite *regular*, with equal petals; calyx *never spurred*
2. Beak of carpel *hairy inside, twisting spirally* at dehiscence and remaining *attached to seeds*; 5 outer stamens lacking anthers; leaves *often pinnate or pinnately lobed* *Erodium* (p. 315)
- Beak of carpel *glabrous inside, rolling upwards* at dehiscence and *releasing the seeds*; all 10 stamens bearing anthers; leaves *always palmate or palmately lobed* *Geranium* (p. 317)

### PELARGONIUM L'Hérit. ex Ait. (1789)

1. Leaves *deeply pinnatisect or palmatisect, coarsely scabrid*, strongly *fragrant recurved at margins*, 2-3" long (shrubs to 3 ft., the petals

1-2 cm. long and pink with darker markings; persisting around old gardens in settled areas):

\**P. x asperum* Ehrh. ex Willd. *Spec. Plant.* ed. 4, 3: 678 (1800).

\**P. graveolens* sens. Ewart *Flor. Vict.* 681 (1931), *non strict.* L'Hérit. (1787-88).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 658 (1948), as *P. graveolens*.

*Vern.*: Rose-oil "Geranium". *Distr.*: DJNP—also S.A., N.S.W.

[An old hybrid between *P. graveolens* L'Hérit. and *P. radens* H. E. Moore, long cultivated in the Mediterranean region for its volatile perfumery oil.]

—Leaves *shallowly lobed* to almost entire; hairs (when present) *soft* 2

2. Lobes of leaf *acute*; petals 1-2 cm. wide, of variable colour (odorous garden shrubs with *very large leaves and flowers*, sometimes persisting as escapes by vegetative propagation):

\**P. "domesticum"* L. H. Bailey—agg.

*Illust.*: Bailey, *Standard Cycl. Hort.* 3: fig. 2838, t. 86 opp. 2527 (1935).

*Vern.*: Garden "Geranium". *Distr.*: Sporadic.

—Lobes of leaf *obtuse* 3

3. Petals <1 cm. long; neither the habit shrubby *nor* roots tuberous 5  
     Petals >1 cm. long (flowers *large and showy*); 7-8 stamens bearing anthers 4
4. Odorous *semi-shrub* to 3 ft. high on coastal sand-dunes; roots *not tuberous*; flowering stems covered with soft *villous hairs*; bracts broadly *ovate-elliptic*,  $\pm$  6 mm. long; petals *bright rose*; pollen orange:

\**P. capitatum* (L.) Ait. *Hort. kew.* 2: 425 (1789).

*Geranium capitatum* L. *Spec. Plant.* 2: 678 (1753).

*Illust.*: Curtis's bot. Mag. 120: t. 7346 (1894), as *P. drummondii*; Britton, *Flor. Bermuda* 192 (1918).

*Vern.*: Rose Pelargonium. *Distr.*: P (Frankston & Sorrento)—also W.A., N.S.W.

—Scarcely odorous and widespread *herb* to 1 ft. high; perennial stems *very short* (almost lacking); roots *tuberous* and foliage mostly radical; flowering stems beset with *short glandular hairs* (or interspersed with a few long simple hairs); bracts  $\pm$  *deltoid*, 2-3 mm. long; petals *deep rosy-magenta*, very unequal; nectary-spur *as long as* (or longer than) calyx-lobes:

*P. rodneyanum* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 143 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 232, col. (1968); Mueller, *Key. Syst. Vict. Plants* 2: fig. 18 (1886).

*Vern.*: Magenta Stork's-bill. *Distr.*: CDEHJKMNPV—also W.A., S.A., N.S.W.

5. Hairs on *acute* calyx-lobes *very short, coarse and scattered*; flowering pedicels to 4 mm. long; nectary-spur to 1 mm. long; posterior petals

2-4 × ± 1 mm., seldom much exceeding the sepals; only 3-5 stamens bearing anthers (weak annual or short-lived perennial of mountain country):

**P. inodorum** Willd. *Enum. Plant. Hort. berol.* 702 (1809).

*Illust.*: Sweet, *Geran.* 1: t. 56, col. (1821).

*Vern.*: Kopata. *Distr.*: DJWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—As for the last, but hairs on calyx short, *fine and dense*, sepals ± *obtuse*, and posterior petals ± 8 mm. long (perennial of higher alps):

**P. helmsii** R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 86: 285 (1962).

*Vern.*: Stork's-bill. *Distr.*: V (Bogong High Plains)—also N.S.W.

—Hairs on calyx *long, villous*; nectary-spur 1-8 mm. long; posterior petals 5-9 mm. long, far exceeding the sepals (perennials) 6

6. Pedicels *slender* (to 20 mm. long in flowering stage); calyx with *scattered, rather rigid spreading hairs*; petals *narrow, not* very conspicuously veined; fertile stamens 4-5 (uncommon plant of dryish, usually coastal areas in west, the umbels often reduced to 2-5 flowers):

**P. littorale** Hueg. *Bot. Arch.* t. 5 (1837).

*Illust.*: Huegel (*l.c.*).

*Vern.*: Stork's-bill. *Distr.*: CKZ—also W.A., S.A., Tas., N.S.W.

—Pedicels short (2-15 mm. long); calyx *densely villous or pubescent* (rarely the vestiture of minute glandular hairs only); petals *prominently purple-veined, wide*; fertile stamens usually 6-8 (very widespread variable plant, the umbels rarely with <6 flowers):

**P. australe** Willd. *Spec. Plant.* 3: 675 (1800).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 222, col. (1968); Rosser, *Wildflowers Vict.* 99, col. (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 226 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 534 (1971).

*Vern.*: Austral Stork's-bill. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

### ERODIUM L'Hérit. (1787-88)

1. Lamina of leaf ovate-cordate, *shallowly and obtusely 5- to 7-lobed*, crenate-serrulate; petals deep pink or mauve; rostrum of fruit rarely exceeding 2.5 cm.; fovea at awn-base *deep*, with conspicuous *concentric fold*, bearing several large-headed *glandular hairs* (Greater Melbourne area):

\***E. malacoides** (L.) Willd. *Phytograph.* 1: 10 (1794).

\**Geranium malacoides* L. *Spec. Plant.* 2: 680 (1753);

\**E. chium* sens. Ewart *Flor. Vict.* 683 (1931), *non* (Burm. f.) Willd. (1794).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 5: t. 185 fig. 4868, *col.* (1841); Coste, *Flor. Franc. I*: fig. 655 (1901).

*Vern.*: Oval Heron's-bill. *Distr.*: KNP—also S.A., Tas., N.S.W.

—Lamina of leaf *deeply lobed or compound*; rostrum of fruit >2.5 cm. long 2

2. Leaves *deeply lobed but not compound*; petals *blue or bluish*; rostrum usually >5 cm. long 4

Leaves *pinnate-compound*; petals *pale to deep pink*; rostrum 2.5-4.5 cm. long 3

3. Leaflets *shallowly or deeply toothed*; fovea at awn-base *deep*, bearing *large glandular hairs*; staminal filaments 3 mm. long (lush glandular annual, with musk-like aroma and stems to >1 ft. long):

\**E. moschatum* (L.) L'Hérit. ex Ait. *Hort. kew.* 2: 414 (1789).

\**Geranium moschatum* L. *Spec. Plant.* ed. 2, 2: 951 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 657 (1948); Ross-Craig, *Drawings Brit. Plants* 6: t. 44 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: 1725 (1924).

*Vern.*: Musky Heron's-bill. *Distr.*: CDJKMNPRTW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Leaflets *deeply pinnatisect*; fovea *shallow, without glands*; staminal filaments 5 mm. long (small annual or biennial):

\**E. cicutarium* (L.) L'Hérit. ex Ait. *Hort. kew.* 2: 414 (1789).

\**Geranium cicutarium* L. *Spec. Plant.* 2: 680 (1753).

*Illust.*: Curtis, *Student's Flor. Tasm. I*: fig. 27 b & c (1956); Ross-Craig, *Drawings Brit. Plants* 6: t. 42 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 4\*: t. 174 fig. 3, *col.* (1924), as var. *pimpinellifolium*.

*Vern.*: Common Heron's-bill. *Distr.*: ABCDEHJKMNPRVZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

4. Leaves *3-lobed*, the teeth *obtuse or broadly acute*; hairs on calyx mostly *simple* and spreading; rostrum 4-7 cm. long; fovea at awn-base long, shallow, glabrous, often with acute transverse fold towards base:

*E. crinitum* R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 83<sup>2</sup>: 93 (1958).

*E. cygnorum* sens. Ewart *Flor. Vict.* 684 (1931), *non strict.* Nees in Lehm. (1844-45).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 244, *col.* (1968); Ewart, *l.c.* fig. 278 (1931), as *E. cygnorum*; Carolin, *Proc. Linn. Soc. N.S.W.* 83: 94 (1958); Burbidge, *Flor. Aust. Cap. Terr.* fig. 227 (1970).

*Vern.*: Blue Heron's-bill. *Distr.*: ABCEHJKMNRVW—also W.A., S.A., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust.

—Leaves *several-lobed*, with *sharply acute* dentition; hairs on calyx mostly *glandular* 5

5. Rostrum usually >8.5 cm. long; fovea *deep and glabrous*, with 2 or more *acute chartaceous* folds having irregular margins (widespread in W., N. & N.E. districts):

\**E. botrys* (Cav.) Bertol. *Amæn. ital.* 35 (1819).

*Geranium botrys* Cav. *Monodelph. Class. Diss. dec.* 4: 218, t. 90 fig. 2 (1787).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 656 (1948); Coste, *Flor. Franc.* 1: fig. 660 (1901).

*Vern.*: Big Heron's-bill. *Distr.*: BCDGHJKMNPR—also W.A., S.A., Tas., N.S.W., A.C.T., Cent. Aust.

—Rostrum 5.5-8.5 cm. long; fovea *shallow*, *hirsute*, with a *single obtuse*, even and *non-chartaceous* fold (Seymour & Heathcote districts):

\**E. brachycarpum* (Godron) Thell. in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1917, 5: 17 (1918).

\**Erodium botrys* Bertol. var. *brachycarpum* Godron *Flor. Juvenalis* ed. 1: 16 (1853);

\**E. obtusiplicatum* (Maire et al., ut *E. botrys* var., 1935) J. T. Howell in *Leaflet. west. Bot.* 5: 67-68 (1947).

*Vern.*: Heron's-bill. *Distr.*: N—also S.A., N.S.W., A.C.T., Qd.

#### GERANIUM L. (1753)

[Adapted from shorter key by R. C. Carolin in

*Proc. Linn. Soc. N.S.W.* 89<sup>3</sup>: 358-59 (1965)]

1. Fruit with *glabrous* and  $\pm$  wrinkled surface; seeds *virtually smooth* (weak, ascending, softly villous annual, with slender fibrous roots and twinned flowers):

\**G. molle* L. *Spec. Plant.* 2: 682 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 654 (1948); Ross-Craig, *Drawings Brit. Plants* 6: t. 34 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>3</sup>: t. 173 fig. 5, col. (1924).

*Vern.*: Dove's-foot, Crane's-bill. *Distr.*: ENPRSTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Fruit variously *downy* or *hairy*, seeds finely or coarsely *sculptured* (annual or perennial). 2

2. Upper part of flowering pedicel and awns of mericarps with conspicuous *long glandular hairs*; seeds *pale brown*,  $\pm$  globular (ascending, thinly rooted annual with leaves deeply dissected into acute linear lobes, and the twinned flowers having *deep pink to magenta* petals):

\**G. dissectum* L. *Centuria I Plant.* 21 (1755).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 37 (1952); Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 15 (1965)—seed; Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>3</sup>: t. 173 fig. 4, col. (1924); Coste, *Flor. Franc.* 1: fig. 638 (1901).

*Vern.*: Cut-leaf Crane's-bill. *Distr.*: NPR—also S.A., N.S.W., Tas., N.Z.

—Pedicel and awns of mericarps bearing *simple hairs*, or sometimes with minutely and inconspicuously glandular ones as well; seeds *dark brown to black* (perennials) 3



3. Flowers *solitary* in axils; roots fibrous or fleshy, but *not* napiform; seeds often ovoid to oblong 5  
Flowers *twinned* on a common peduncle; plants often with *napiform* tap-root; seeds usually subglobular 4
4. Hairs of flowering pedicels *retrorse and appressed*; staminal filaments 2.5-4 mm. long; tap-root *always napiform*; leaf-lobes usually *linear*; seeds *almost black*, with  $\pm$  *equal-sided alveolæ* (chiefly western):

**G. retrorsum** L'Hérit ex DC. *Prodr.* 1: 644 (1824).

*Illust.*: Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 1 (1965)—seed; *ibid.* t. 7 fig. 3 (1965)—fruiting pedicel.

*Vern.*: Crane's-bill. *Distr.*: CEHJMN VW—also W.A., S.A., Tas., N.S.W., Qd.

—As for the last, but tap-root *never napiform*, leaf-lobes *broad* and seeds *dark brown* with  $\pm$  *elongated alveolæ* (coast of far E. Gippsland):

**G. homeanum** Turcz. in *Bull. Soc. Nat. Moscou* 36: 591 (1863).

*Vern.*: Crane's-bill. *Distr.*: Z—also N.S.W., Qd, N.Z., Java, Calif. (introd.)

—Hairs of flowering pedicels *coarse, reflexed or spreading* (never appressed); staminal filaments 4-10 mm. long (tap-root sometimes napiform; seeds black with  $\pm$  *equal-sided alveolæ*):

**G. solanderi** R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89<sup>3</sup>: 350 (1965).

*G. pilosum* Soland. ex Willd. *Spec. Plant.* 3: 706 (1800), *non* Cav. (1788).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 59, col. (1968); Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 2 & 3 (1965)—seed; *ibid.* t. 7 fig. 1 & 2 (1965)—fruiting pedicel; Burbidge, *Flor. Aust. Cap. Terr.* fig. 225 (1970).

*Vern.*: Austral Crane's-bill. *Distr.*: ENRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

5. Flowering stems *shorter than* congested basal leaves, often reduced to a single short stout pedicel-peduncle; seeds *black*,  $\pm$  2.5 mm. long, minutely *reticulate* (rosetted herbs of alpine and subalpine grassland) 7

Flowering stems usually *longer than* basal leaves; pedicel-peduncle loosely and *retrorsely* hairy; petals pale pink or whitish; seeds *brown*, with distinctly *alveolate* surface 6

6. Pedicel-peduncle 2-5 cm. long; petals 5-6  $\times$   $\pm$  3 mm.; stamens  $\pm$  3 mm. long; rostrum of fruit 9-10 mm. long; seeds 2 mm. long (widespread forest herb):

**G. potentilloides** L'Hérit. ex DC. *Prodr.* 1: 639 (1824).

*Illust.*: Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 6-8 (1965)—seed; *ibid.* t. 7 fig. 5 & 6 (1965)—fruiting pedicel.

*Vern.*: Crane's-bill. *Distr.*: CDEHJMNSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Pedicel-peduncle 7-10 cm. long; petals  $\pm 14 \times 6$  mm.; stamens  $\pm 6$  mm. long; rostrum of fruit  $\pm 15$  mm. long; seeds 3 mm. long, with very minute alveolæ (plant of far E. Gippsland, in montane swamps and along stream-banks):

*G. neglectum* R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89<sup>3</sup>: 343 (1965).

*Illust.*: Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 12 (1965)—seed; *ibid.* t. 7 fig. 8 (1965)—fruiting pedicel.

*Vern.*: Crane's-bill. *Distr.*: Z—also N.S.W., Qd (far S.E.).

7. Hairs of pedicel dense, *coarse, antrorsely appressed*; petals deep pink, oblong to obovate, about *as long as* sepals; rostrum of fruit  $\pm 11$  mm. long:

*G. antrorsum* R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89<sup>3</sup>: 357 (1965).

*Illust.*: Carolin, *Proc. Linn. Soc. N.S.W.* 89: t. 6 fig. 14 (1965)—seed; *ibid.* t. 7 fig. 10 (1965)—fruiting pedicel.

*Vern.*: Rosetted Crane's-bill. *Distr.*: RSVW—also N.S.W., A.C.T.

—Hairs of pedicel often *fine, retrorsely appressed*; petals deep rose to white, narrowly oblong, often much *shorter than* sepals; rostrum of fruit 8-10 mm. long:

*G. sessiliflorum* Cav. *Monodelph. Class. Diss. dec.* 4: 198, t. 77 fig. 2 (1787. subsp. *brevicaule* (Hook. f., *ut sp.*) R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89<sup>3</sup>: 357 (1965).

*Illust.*: Cavanilles (*l.c.*); Carolin, *l.c.*: t. 6 fig. 13 (1965)—seed; *ibid.* t. 7 fig. 11 (1965)—fruiting pedicel.

*Vern.*: Alpine Crane's-bill. *Distr.*: VW—also Tas., N.S.W.

[It is probable that this taxon hybridises in the field with alpine forms of *G. potentilloides* which are co-extensive, but intermediates between the subspecies and seemingly more closely related *G. antrorsum* have not been observed.]

## Family OXALIDACEÆ

### OXALIS L. (1753)

1. Stem absent or *never developed far* above ground level; leaves all radical or crowded at apex of stout congested rhizomes; flowers rarely white and, if so, then leaves  $>3$  cm. diam. 5  
Stems *well developed* above ground, with *slender leafy branches* (if leaves sometimes  $\pm$  radical, then  $<2$  cm. diam. and flowers white) 2
2. Plant *producing bulbs*; flowers mauve to rosy pink, solitary in axils 4  
Plant with *runners or slender rhizomes* but *without bulbs* 3
3. Flowers *yellow*, 5-10 mm. wide, 1-6 in pedunculate *axillary umbels*; capsule *cylindrical, pubescent, beaked*, 5-25 mm. long (almost ubiquitous, very common decumbent trailer):

*O. corniculata* L. *Spec. Plant.* 1: 435 (1753).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 303, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 653 n. 8-11 (1948); Hegi, *Ill. Flor. Mittel-Eur.* 4<sup>o</sup>: t. 174 fig. 6, col. (1924); Burbidge, *Flor. Aust. Cap. Terr.* fig. 228 (1970).

*Vern.*: Yellow Wood-sorrel. *Distr.*: ABCDEHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Flowers *white*, 10-20 mm. wide, *solitary* in upper axils, with 2 bracteoles near middle of peduncle; capsule  $\pm$  *globular*, *glabrous*, *beakless*, 4-5 mm. long (localized rhizomic plant of wet subalpine habitats on and near the Baw Baws):

*O. lactea* Hook. *Compan. Bot. Mag.* 1: 276 (1835).

*O. magellanica* sens. Ewart *Flor. Vict.* 686 (1931) atque auctt. Aust. plur., *non* Forst. (1789).

*Illust.*: Curtis, *Student's Flor. Tasm.* 1: fig. 28 (1956); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 357, col. (1967).

*Vern.*: Snowdrop Wood-sorrel. *Distr.*: S—also Tas., N.Z., ?N.G.

4. Leaves *crowded in false whorls* of 4-10 at nodes, with *slender* petioles 2-6 cm. long; leaflets *obcordate*, 10-16 mm. wide; flowers *very pale mauve*, 1-2 cm. long, appearing spring and summer (bulbs forming in leaf-axils *above ground*, much <2 cm. long):

\**O. incarnata* L. *Spec. Plant.* 1: 433 (1753).

*Illust.*: Jacquin, *Oxalis* t. 71 (1794).

*Vern.*: Pale Wood-sorrel. *Distr.*: MNR—also S.A., Tas.

—Leaves *never* appearing whorled, with *very short flattened* petioles only 1-2 mm. long; leaflets *oblong-cuneate*, 3-4 mm. wide; flowers *bright rosy-pink*, 2-3 cm. long, appearing autumn and winter (bulbs entirely *subterranean*, 2-3 cm. long):

\**O. hirta* L. *Spec. Plant.* 1: 434 (1753).

*Illust.*: Marloth, *Flor. S. Afr.* 2<sup>o</sup>: t. 33 fig. b, col. (1925); Reiche in Engler & Prantl, *Natürl. PflFam.* III 4: fig. 17 D (1896); Loddiges, *Bot. Cabinet* 3: t. 213 (1818).

*Vern.*: Hairy Wood-sorrel. *Distr.*: NP (Melbourne & Mornington)—also S.A.

5. Flowers *wholly clear yellow*, 2-2.5 cm. long, in umbels of 3-16; leaflets almost *glabrous*, *obcordate* and *notched*, 1-3 cm. broad, often with *purple-brown flecks* on upper surfaces; bulb *ovoid*, 1-3 cm. long, producing an *elongated*, *tuberiform*, *fleshy*, *glassy-white* root:

\**O. pes-caprae* L. *Spec. Plant.* 1: 434 (1753).

\**O. cernua* Thunb. *De Oxalide* 14 (1781).

*Illust.*: Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 4, 1: t. opp. 881 col., 882 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 659 (1948), as *O. cernua*; Gardner in Meadly, *Weeds W. Aust.* 100 col., & 102 (1965); Calder in *Rec. bot. Survey India* 6<sup>o</sup>: t. 4 (1919); Coste, *Flor. Franc.* 1: fig. 698 (1901), as *O. cernua*.

*Vern.*: Soursob. *Distr.*: ACDEGHMNPRTW—also W.A., S.A., Tas., N.S.W., Cent. Aust., N.Z.

—Flowers *pink or purplish* (rarely white); leaflets pubescent (at least beneath) or, if glabrous, then fishtail-shaped 6

6. Peduncle 1-flowered, as long as foliage (<10 cm.); corolla 2-3 cm. long, yellowish in throat; petiole with scattered simple hairs; leaflets obovate, rounded, 2-4 cm. long, minutely *flecked with black* when dried (as is the calyx); bulb ovoid,  $\pm$  2 cm. long, enclosed by *blackish resinous scale-leaves*:

\**O. purpurea* L. *Spec. Plant.* 1: 433 (1753).

*O. variabilis* N. J. Jacq. *Oxalis* 89, t. 52 (1794).

*Illust.*: Jacquin (*l.c.*); Rice, *Wildflowers Cape Good Hope* t. 22 fig. 1, *col.* (1951); Levyns, *Guide Flor. Cape Penins.* 158 (1929), as *O. variabilis*; Marloth, *Flor. S. Afr.* 2<sup>1</sup>: t. 33 fig. E & F, *col.* (1925), as *O. variabilis*.

*Vern.*: Large-flower Wood-sorrel (One-o'clock—S.A.). *Distr.*: DEMNP—also W.A., S.A., Tas., N.S.W.

—Peduncle 3- to many-flowered; corolla <2 cm. long or, if >2 cm., then petioles shortly and densely *glandular-hairy* 7

7. Plant with *short stem*, developed at least to ground level; petioles with *very short glandular or appressed hairs* 9

Plant quite *stemless*; petioles *springing directly* from bulb, either glabrous or weak and with sparse, long, spreading hairs 8

8. Leaflets *obcordate* with *narrow apical notch*, *hairy beneath*; petioles and pedicels with long *scattered hairs*; flowers usually <8 per umbel; new bulbils *sessile*, very numerous, the tuberiform root glassy-white and fleshy:

\**O. corymbosa* DC. *Prodr.* 1: 696 (1824).

\**O. martiana* Zucc. in *Denkschr. Münch. Akad.* 9: 144 (1825).

*Illust.*: Fawcett & Rendle, *Flor. Jamaica* 4<sup>1</sup>: 157 (1920); Bailey, *Weeds & susp. poison Plants Qd* fig. 62 (1906); Calder in *Rec. bot. Survey India* 6<sup>1</sup>: t. 9 (1919).

*Vern.*: Pink Shamrock. *Distr.*: NPRTXW—also S.A., N.S.W., Qd, Cent. Aust.

—Leaflets widely *obdeltoid*, with *very wide shallow notch* (giving each a fishtail-like appearance), quite *glabrous* as are the petioles and pedicels; flowers 8-13 per umbel; new bulbils borne *on stolons* to 2 cm. long:

\**O. latifolia* Humb. et al. *Nov. Gen. et Spec.* 5: 237, t. 467 *col.* (1821).

*Illust.*: Humboldt etc. (*l.c.*); Calder in *Rec. bot. Survey India* 6<sup>1</sup>: t. 8 (1919).

*Vern.*: Large-leaf Wood-sorrel. *Distr.*: NW—also S.A., Tas., N.S.W.

9. Petioles, peduncles and pedicels minutely *glandular-hairy*; leaflets *glabrous* above, *obscurely notched*; corolla 1.5-2.5 cm. long; sepals 6-8 mm. long; bulb ovoid, 1-4 cm., with pale tunic:

\**O. bowiei* W. Herbert in Lindl. in *Edwards's bot. Reg.* 19: t. 1585, col. (1833).

*Illust.*: Herbert (*l.c.*).

*Vern.*: Bowie Wood-sorrel. *Distr.*: MNR—also N.S.W.

—Petioles, peduncles and pedicels with scattered appressed hairs or glabrescent; leaflets *pubescent* above, *deeply* notched; corolla 1.1-1.5 cm. long, rich rose and darker at throat; sepals 4-5 mm. long; bulbs *absent*, but perennial *rhizomic stems* emergent, thick,  $\pm$  woody and covered with scars of leaf-bases (chiefly in and about old gardens):

\**O. articulata* Savigny in Lam. *Encycl. méth. Bot.* 4: 686 (1798).

\**O. purpurata* sens. Ewart *Flor. Vict.* 687 (1931), *non* N. J. Jacq. (1798).

*Illust.*: Troll in *Flora 1154*: t. 6 fig. 24 (1922).

*Vern.*: Wood-sorrel. *Distr.*: Sporadic—also A.C.T.

[In Ewart's *Flor. Vict.* 686 (1931) *O. tetraphylla* Cav. is admitted on the basis of a collection from Bairnsdale (Mar. 1908). This material is undoubtedly referable to *O. latifolia* Humb. et al., and the leaflets are in 3's, *not* in 4's as stated by Ewart. In the same book, South African *O. bifurca* Lodd. is also recorded (p. 687); the voucher specimens (from Little River, Apr. 1925) are branching, with narrow-linear, deeply cleft, sericeous leaflets. The identification has not been checked, and this plant has not appeared in the State again during the past 40 years, but it is recorded also for Campbelltown, N.S.W.]

South African *O. obtusa* N. J. Jacq.—with small downy leaves, pale primrose-yellow flowers elegantly and finely *veined in deep red* and small, fusiform, *very angular bulbs*—was noted on the banks of Yarra River near Morell Bridge, Melbourne, Aug. 1949.]

## Family LINACEÆ

### LINUM L. (1753)

1. Flowers *yellow*, 4-5 mm. wide; capsules 2-3 mm. diam.; styles *free* from base; stigmas *capitate* (slender glabrous annual with linear-lanceolate leaves 5-12 mm. long, ranging from Belgrave eastward into Gippsland, also near Timboon in W. Otway region):

\**L. trigynum* L. *Spec. Plant.* 1: 279 (1753).

\**L. gallicum* L. *Spec. Plant.* ed. 2, 1: 410 (1762).

*Illust.*: Coste, *Flor. Franc.* 1: fig. 599 (1901); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: 14 fig. 1671 a-c (1924)—both as *L. gallicum*.

*Vern.*: French Flax. *Distr.*: KNPTW—also S.A., N.S.W., Qd, N.Z.

—Flowers *blue*, 10-20 mm. wide; capsule 5-10 mm. diam.; stigmas *club-shaped* 2

2. Styles *united* to above the middle; capsule *not or hardly exceeding* the calyx; sepals  $\pm$  1.5 mm. wide in fruit; leaves normally <2 mm. wide (perennial of wide distribution):

**L. marginale** A. Cunn. ex Planch. in Hook. *Lond. J. Bot.* 7: 169 (1848).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 344, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 229 (1970).

*Vern.*: Native Flax. *Distr.*: BCDEGHJKMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Styles *free* from the base; capsule distinctly *longer than* calyx; sepals 2-3 mm. wide in fruit; leaves 2-4 mm. wide (annual escape from cultivation, notably on basaltic terrain near Melbourne):

\***L. usitatissimum** L. *Spec. Plant.* 1: 277 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 175 fig. 1 col., 21 & 23 (1924); Coşte, *Flor. Franc.* 1: fig. 607 (1901).

*Vern.*: Flax. *Distr.*: N—also Tas., N.S.W., A.C.T., Qd.

### Family ZYGOPHYLLACEÆ

1. Leaves *undivided, alternate*; fruit a *fleshy drupe* (rigid, sometimes thorny shrub of  $\pm$  saline ground in N.W. & far W.) *Nitraria* (p. 326)  
Leaves *divided*, usually *compound and opposite*; fruit a *capsule* 2
2. Leaves with *only 2 fleshy leaflets*; capsule *angular, thin-textured*, 4- to 5-locular *Zygophyllum* (p. 323)  
Leaves with *several leaflets*; capsule separating into 5 *hard, thick, spiny particles* (prostrate yellow-flowered, villous annual of Murray & Goulburn Valleys) *Tribulus* (p. 325)  
Leaves *multisect* into narrow-linear segments, *alternate*, scattered; capsule 3-locular *\*Peganum* (p. 326)

### ZYGOPHYLLUM L. (1753)

1. Capsule 1-2 cm. long and broad, splitting into 4 *distinct indehiscent fruitlets* with *wide, rounded, reticulate wings*; leaflets *linear-terete*, 4-10 mm. long (weak shrub of N.W. Mallee, often scrambling for several feet):

**Z. aurantiacum** (Lindl.) F. Muell. in *Linnaea* 25: 376 (1853).

*Ræpera aurantiaca* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 70 (1838);

*Z. fruticosum* sens. Ewart *Flor. Vict.* 690 (1931), atque auctt. Aust. plur., *non* DC. (1824).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 660 L-M (1948), as *Z. fruticosum*.

*Vern.*: Shrubby Twin-leaf. *Distr.*: ACF—also S.A., N.S.W., Qd.

[The var. *eremæum* (Diels, ut *Z. fruticosum* var.) Hj. Eichler in *Taxon* 12: 297 (1963) differs in having paler *pointed* petals *hardly exceeding* the sepals, and consistently *smaller fruits* (8-10 mm. long and wide); it is not uncommon in the far N.W. Murray Mallee.]

- Capsule splitting into 4 or 5 *loculi* which release the seeds, never widely winged; leaflets flattened (habit never scrambling) 2
2. Valves of capsule rounded at summit (annual plants) 5  
Valves of capsule truncate at summit, the whole shaped somewhat like a miniature cattle-bell 3
3. Petals 5, bright yellow, 10-15 mm. long; stamens 10 with winged filaments; capsule 5-angled, with a minute blunt appendage at upper corner of each *loculus* (frequent succulent Mallee undershrub with obliquely obovate, bright green leaflets 2-4 cm. long):

*Z. apiculatum* F. Muell. in *Linnæa* 25: 373 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 179, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 660 j (1948)—seed & valve of endocarp.  
*Vern.*: Pointed or Common Twin-leaf. *Distr.*: ABF—also W.A., S.A., Tas. (Goose Id in Bass Strait), N.S.W., Qd, Cent. Aust.

- Petals 4; stamens 8 (or 4), the filaments *not* winged; capsule 4-angled; without appendages; leaflets oblong to narrowly cuneate 4
4. Flowers yellow, 10-15 mm. long; capsule 8-12 mm. long (perennial of coast and Mallee):

*Z. billardieri* DC. *Prodr.* 1: 705 (1824).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 290, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 660 k (1948)—T.S. of capsule.  
*Vern.*: Coast Twin-leaf. *Distr.*: AEJKP—also W.A., S.A., Tas. (Flinders Id), N.S.W., Qd.

[Inland populations are much less robust than the typical, coastal form; they have slender,  $\pm$  wiry branches, narrower (< 3 mm. broad) acute leaves, relatively smaller flowers, and are probably worthy of some infra-specific status.]

- Flowers white, 2-4 mm. long; capsule 5-7 mm. long (annual of Murray Mallee):

*Z. ammophilum* F. Muell. *Fragm. Phyt. Aust.* 11: 28 (1878).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 8 n. 218 (1965).  
*Vern.*: Sand Twin-leaf. *Distr.*: ABFG—also S.A., N.S.W., Qd, Cent. Aust.

5. Sepals, petals and carpels 5; flowers yellow,  $\pm$  5 mm. long; capsule globular, acutely 5-angled, 5-7 mm. long; seeds lustrous, 1 per *loculus* (annual of Murray Mallee):

*Z. iodocarpum* F. Muell. in *Linnæa* 25: 372 (1853).

*Vern.*: Violet Twin-leaf. *Distr.*: AG—also W.A., S.A., N.S.W., Qd, Cent. Aust.

- Sepals, petals and carpels 4; capsular longer than wide; seeds 2-6 per *loculus* 6
6. Petals white, 1-2 mm. long, shorter than sepals; staminal filaments without wings; capsule ovoid-ellipsoid, 6-8 mm. long; leaflets 1-5 mm. wide (small annual of Murray Mallee):

**Z. ovatum** Ewart & J. White in *J. roy. Soc. N.S.W.* 42: 197, t. 36 (1908).

*Illust.*: Ewart & White (*l.c.*).

*Vern.*: Dwarf Twin-leaf. *Distr.*: AB—also W.A., S.A., N.S.W.

—Petals yellow, 4-15 mm. long, *much exceeding* the sepals; filaments *conspicuously winged*; leaflets wider than 5 mm., often *glaucous* 7

7. Capsule relatively large (14-20 mm. long), with 3-6 seeds per loculus; leaflets *divergent, entire*; petals 12-15 mm. long:

**Z. glaucum** F. Muell. in *Trans. Vict. Inst.* 29 (1855).

*Z. glaucescens* F. Muell. *Plants indig. Colon. Vict.* 1: 228 (1860-62).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 660 c-h (1948), as *Z. glaucescens*.

*Vern.*: Pale Twin-leaf. *Distr.*: ABGMN—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—As for the last, but leaflets *crenate at summit* (with 3 rounded lobes) and petals only 7-9 mm. long:

**Z. crenatum** F. Muell. in *Linnaea* 25: 374 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 660 I—seed, & 662 (1948).

*Vern.*: Notched Twin-leaf. *Distr.*: AG—also S.A., N.S.W.

—Capsule *small* (7-10 mm. long), with 2-3 seeds per loculus; leaflets *entire, not diverging but appressed to each other*; petals 3-6 mm. long (rare plant of gypsum flats in far N.W.):

**Z. compressum** J. M. Black in *Trans. roy. Soc. S. Aust.* 48: 256 (1924).

*Vern.*: Rabbit-ears Twin-leaf. *Distr.*: A—also S.A., Cent. Aust.

[The South African *Z. sessilifolium* L. appeared at Coode Island (Oct. 1908), but failed to persist; this decumbent, shrubby perennial has white 5-partite flowers 1-2 cm. wide.]

# TRIBULUS L. (1753)

**T. terrestris** L. *Spec. Plant.* 1: 387 (1753).

*Illust.*: Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 3: 674 & t. opp. 672, col. (1954); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 153 (1958); Black, *Flor. S. Aust.* ed. 2: fig. 663 B-C (1948)—fruit; Gardner in Meadly, *Weeds W. Aust.* 104 col., & 106 (1965); Burbidge, *Flor. Aust. Cap. Terr.* fig. 230 (1970).

*Vern.*: Caltrop. *Distr.*: AGHLMR—also W.A., S.A., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust.

[Populations in the Victorian Mallee vary considerably in fruiting characters—number and length of spines, and degree of hairiness of the carpels. It is possible that more than a single taxon is involved, and the group requires careful field study.]



## NITRARIA L. (1758-59)

*N. schoberi* L. *Syst. Nat.* ed. 10, 2: 1044 (1758-59).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 660 A-B, & 661 (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 17 (1886); Engler, *Natürl. PflFam.* III 4: 91 (1890).

*Vern.*: Nitre-bush. *Distr.*: ACEGH—also W.A., S.A., N.S.W., Qd.

[The African Rue, *Peganum harmala* L. *Spec. Plant.* 1: 444 (1753) of Mediterranean regions, was found to be covering an area of some 25 sq. yards at Mooroopna West in Jan. 1955, but it is not known to have persisted there, as it has apparently done at Tintinara, S.A. This glabrous rhizomic perennial (to 2 ft. high) bears alternate leaves divided several times into narrow-linear segments, solitary white flowers  $\pm$  15 mm. long, and 3-locular capsules to  $\pm$  1 cm. diam.]

## Family RUTACEÆ

1. Fruit *indehiscent*, succulent, whitish (glabrous tree of E. Gippsland, with flat, oblong, opposite or alternate leaves 2-4" long and small slenderly stalked flowers in axillary cymes) *Acronychia* (p. 341)  
Fruit *dehiscent*, dry, lobed 2
2. Flowers *minute*, sessile, in terminal heads; carpels 2; leaves alternate, terete, <8 mm. long (ericoid shrubs of Mallee) *Microcybe* (p. 337)  
Flowers *conspicuous*, not capitate; carpels normally 4 or 5 3
3. Leaves *alternate*, simple; petals 5 6  
Leaves *opposite*, sometimes compound; petals 4 4
4. Petals *valvate*, cohering in a cylindrical tube, 1-5 cm. long; calyx mostly cup-shaped; leaves simple, broad ( $\pm$  stellately woolly, rarely glabrous shrubs) *Correa* (p. 338)  
Petals *free* as soon as buds open, <1 cm. long 5
5. Stamens 8; disk of corolla *entire* *Boronia* (p. 327)  
Stamens 4; disk with 4 gland-like lobes *Zieria* (p. 330)
6. Stamens 5 (rare N.W. tree of Murray Valley, with linear leaves 3-6" long and very small whitish flowers) *Geijera* (p. 327)  
Stamens 10 (habit shrubby) 7
7. Calyx *minute*, hidden amongst hairs and quite *inconspicuous*; petals *yellow*; disk *absent*; stigma *large* *Asterolasia* (p. 337)  
Calyx *conspicuous* or, if very small, then *not* hidden by hairs; disk *present*; stigma *small* 8
8. Stamens *glabrous*, spreading at anthesis; petals *valvate* in bud, mostly *yellowish*, often scaly, 4-6 mm. long *Phebalium* (p. 333)  
Stamens  $\pm$  *ciliate* or even woolly, *erect* or *incurved* at anthesis; petals usually imbricate in bud, *white* or *pink*, never scaly, 6-12 mm. long 9
9. Anthers with only a *minute* appendage; leaves and branches often manifestly *tuberculate-glandular* *Eriostemon* (p. 332)  
Anthers tipped by a *prominent bearded* appendage; leaves and branches *never* prominently glandular *Crowea* (p. 333)

## GEIJERA Schott (1834)

*G. parviflora* Lindl. in Mitch. *J. Exped. trop. Aust.* 102 (1848).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 671 (1948), as *G. linearifolia*; Adam in Ewart, *Handb. For. Trees* t. 42 (1925); Maiden, *For. Flor. N.S.W.* 7: t. 243 (1922).

*Vern.*: Wilga. *Distr.*: FG—also S.A., N.S.W., Qd.

## BORONIA Sm. (1798)

1. Leaves (at least the adult) *simple and entire* 6  
     Leaves all variously *divided* 2
2. Leaflets 3 (except in var. *hyssopifolia*) *entire, elliptic- to linear-lanceolate, acute*, each <15 mm. long but exceeding the common petiole (low sprawling semi-shrubs, having solitary, axillary, white or pinkish flowers with *hairy* staminal filaments):

*B. nana* Hook. *Icon. Plant.* 3: t. 270 (1840).

*B. polygalifolia* sens. Ewart. *Flor. Vict.* 700 (1931), atque auctt. plur., non Sm. (1798).

*Illust.*: Hooker (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 38, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 664 D (1948)—stamen; Garnet, *Wildflowers Wilson's Prom.* fig. 537 (1971).

*Vern.*: Dwarf Boronia. *Distr.*: CDEJKNPRSVW—also S.A., Tas., N.S.W., A.C.T.

The varieties represented in Victoria may be distinguished by the following key—

Leaves trifoliolate

Leaves glabrous:

var. *nana*

Leaves and whole plant hispid:

var. *pubescens* (Benth.) J. H. Willis in *Vict. Nat.* 73: 192 (1957).

*B. polygalifolia* var. *pubescens* Benth. *Flor. aust.* 1: 321 (1863);

*B. hispida* E. Cheel in *J. roy. Soc. N.S.W.* 61: 403 (1928).

Leaves simple, glabrous:

var. *hyssopifolia* R. Melville in *Kew Bull.* 1954: 463 (1954)

[The varieties *nana* and *hyssopifolia* are co-extensive almost throughout the range of the species in Victoria; var. *pubescens* is apparently confined to Mt. Cole, the Grampians and western Otways.]

—Leaflets 3-5, crowded, *cuneate to rotund*, very *obtuse*, thick, glabrous and shining, each <10 mm. long (dwarf alpine shrub with solitary pink flowers and *glabrous* filaments):

**B. algida** F. Muell. in *Trans. phil. Soc. Vict.* 1: 100 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 508, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 235 (1970).

*Vern.*: Alpine Boronia. *Distr.*: RVW—also N.S.W., A.C.T.

—Leaflets otherwise (if very small, then either terete, more than 5, or much shorter than common petiole) 3

3. Leaves all *once* pinnate; leaflets 5 or more, widely spreading, *flattened* or, if subterete, then hairy and on a very short common petiole (flowers comparatively *large*, prolific, white to deep pink) 4

Leaves *very shortly petiolate*, with 3-5 *clavate-terete glabrous* leaflets, each <5 mm. long (small wiry, *tuberculate*, very rare desert shrub to 2 ft.; flowers pink, 1-3 in terminal or axillary clusters):

**B. inornata** Turcz. in *Bull. Soc. Nat. Moscou* 25<sup>2</sup>: 164 (1852).

*Vern.*: Desert Boronia. *Distr.*: CG(?)—also W.A., S.A., N.S.W.

—Leaves *long-petiolate*, 10-20 mm. long, with 3 small subterete to narrowly cuneate terminal leaflets which may be bifid, trifid or again divided into secondary pinnæ (erect, often tall and sometimes tuberculate shrubs of hilly country; odour of crushed leaves rank, unpleasant, resembling turpentine; flowers prolific, white to deep rose):

**B. anemonifolia** A. Cunn. in *Field. Geogr. Mem. N.S.W.* 330 (1825).

incl. *B. dentigera* F. Muell. in *Trans. Vict. Inst.* 32 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 309, col. (1968).

*Vern.*: Sticky Boronia. *Distr.*: DHJMNSTVWZ—also Tas. (var.), N.S.W., Qd.

[Type material of *B. dentigera* F. Muell. can hardly be distinguished, even as a variety, from typical *B. anemonifolia* A. Cunn. from the Blue Mountains, N.S.W. The variety *variabilis* (Hook.) Benth. has leaves more or less twice ternate, with larger more tuberculate leaflets; it occurs in Tasmania, on the larger islands of Bass Strait, and has been noted at Corner Inlet, Waratah Bay and Portarlington in south-coastal Victoria—robust examples may have leaves 1" or more in length, appearing falsely pinnate.]

4. Leaves <15 mm. long, *very shortly petiolate*; leaflets 5-9, rather crowded, 5-12 mm. long, to 1.5 mm. wide; style *exceedingly short*, the stigma swollen (heathland shrubs usually 1-3 ft. high, but occasionally to 10 ft.):

**B. pilosa** Labill. *Nov. Holl. Plant. Specim.* 1: 97, t. 124 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 106, col. (1968); King & Burns, *Wildflowers Tasm.* 19, col. (1969).

*Vern.*: Hairy Boronia. *Distr.*: CDEHJNWX—also S.A., Tas., N.S.W.

[The foliage is typically hairy, but in south-western Victoria—Grampians, Portland, Casterton, Lower Glenelg etc.—the leaves are often almost or quite glabrous as in var. *floribunda* Hook. f. of Tasmania, while the petals are bluntish (cf. acuminate in Gippsland and typical Tasmanian forms).]

—Leaves 1-3" long, on petioles  $\pm$  10 mm.; leaflets 7-15, rather distant, 10-25 mm. long; style conspicuous and *tapering* 5

5. Leaflets  $\pm$  2 mm. wide, thin, *acute to acuminate*, often *subserrulate*, the rhachis *slender*; style without capitate stigma; filaments fringed with *copious hair* (slender mountain and gully shrubs up to 20 ft., the lax branches and foliage usually bearing scattered tubercles; crushed leaves with an odour resembling black currants; flowers pale pink or almost white, extremely profuse):

*B. muelleri* (Benth.) E. Cheel in *J. roy. Soc. N.S.W.* 58: 147 (1924).

*B. pinnata* Sm., var. *muelleri* Benth. *Flora Aust.* 1: 319 (1863).

*Illust.*: Rosser, *Wildflowers Vict.* 53, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 81 (1967); Adam in Ewart, *Handb. For. Trees* t. 44 (1925), as *B. pinnata*.

*Vern.*: Forest Boronia (Pink Boronia). *Distr.*: KPTWZ—also ?N.S.W.

[*B. thujona* Penfold & Welch occupies similar near-coastal country in New South Wales. Except for rather large, more serrulate leaves and larger deeper pink flowers, it is extremely close to *B. muelleri*; the essential oil from its leaves, however, is astonishingly different, consisting of 80-90% thujone.]

—Leaflets 2-7 mm. wide, thick, *acute to obtuse*, *not* or rarely *subserrulate*, the rhachis *manifestly winged* between pairs of leaflets; style slender, with small capitate stigma; filaments with a *few scattered* hairs or almost glabrous (divaricate bush with rigid non-tuberculate branches, endemic in Grampians):

*B. latipinna* J. H. Willis in *Vict. Nat.* 73: 192 (1957).

*B. pinnata* sens. Ewart *Flor. Vict.* 701 (1931), *non* Sm. (1798).

*Illust.*: Relf in Pescott, *Native Flowers Vict.* t. opp. 72 (1914), as *B. pinnata*.

*Vern.*: Grampians Boronia. *Distr.*: DJ.

6. Leaves distinctly *flattened*, linear to oblanceolate; plants of stony hills or heathy swamps 8

Leaves *subterete* or very thick and short (<7 mm. long); small slender shrubs of mallee sand-hills 7

7. Flowers *bright pink*, sparse, solitary *at ends of branches*; leaves *subterete*, 10-20 mm. long; plant wiry, wholly *glabrous* (rare, in Big & Little Deserts):

*B. filifolia* F. Muell. *Fragm. Phyt. Aust.* 1: 3 (1858).

*Illust.*: Ashby in *S. Aust. Mus. Wild Flower Post Card* n. 5, col. (1958); Black, *Flor. S. Aust.* ed. 2: fig. 664 c (1948)—stamen.

*Vern.*: Slender Boronia. *Distr.*: BC—also S.A.

—Flowers lilac or purplish, *drying blue*, numerous but solitary in *leaf axils*; leaves oblong-linear, thick obtuse, 3-7 mm. long; plants *often pubescent* or glandular:

**B. cærulescens** F. Muell. in *Trans. phil. Soc. Vict.* 1: 11 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 162, col. (1968); Nicholls, *Vict. Nat.* 58: t. 26 (Feb. 1942); *ibid.* 76: 239 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 664 G-M (1948).

*Vern.*: Blue Boronia. *Distr.*: ABCDGJ—also W.A., S.A., N.S.W.

8. Leaves >2 cm. long, glabrous and shining above, *hoary beneath*; flowers *axillary*, deep pink, large (10 mm. wide or more); petals *3 times as long as calyx* (rare, tall shrub of Snowy R. gorge and near Timbarra R., E. Gippsland):

**B. ledifolia** (Vent.) J. Gay in *Mém. Mus. Hist. nat., Paris* 7: 450 (1821).

*Lasiopetalum ledifolium* Vent. *Jard. Malm.* sub. n. 59 (1804).

*Illust.*: Hurley, *Aust. Plants* 2<sup>18</sup>: 208 (1964); *Paxton's Mag. Bot.* 8: t. opp. 123 (1841); Scarth-Johnson, *Wildflowers N.S.W.* 75, col. (1968).

*Vern.*: Showy Boronia. *Distr.*: W—also N.S.W., Qd.

[The var. *triphylla* (Sieber ex Spreng.) Benth. is 3-foliolate and apparently as widespread in the Port Jackson region, N.S.W., as the typical simple-leaved form.]

- Leaves <2 cm. long, glabrous on both surfaces; flowers *axillary*, white to pale pink, <10 mm. wide; petals about *twice* length of calyx; staminal filaments *hairy* (dwarf procumbent under-shrub):

**B. nana** Hook. var. *hyssopifolia* R. Melville

[See p. 327]

- Leaves <2 cm. long, wholly glabrous; flowers 1-several in *terminal clusters*, white or pink, <10 mm. wide; petals only *slightly exceeding* calyx or even shorter; staminal filaments *glabrous* (procumbent to erect semi-shrubs or annuals of heathy swamps):

**B. parviflora** Sm. *Tracts nat. Hist.* 295, t. 6 (1798).

*Illust.*: Smith (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 665 (1948), as *B. palustris*; Labillardière, *Nov. Holl. Plant. Specim.* 1: t. 126 (1804), as *B. pilonema*; Garnet, *Wildflowers Wilson's Prom.* fig. 538 (1971).

*Vern.*: Swamp Boronia. *Distr.*: DEJKNTZ—also S.A., Tas., N.S.W., Qd.

[*B. palustris* Maiden & J. M. Black, of South Australia and western Victoria, is presumed to differ in having petals shorter than sepals and only 4 stamens, but these characters are not consistent and, in a single clump of plants, flowers may be found with 4, 6 or 8 stamens. The Tasmanian *B. pilonema* Labill. appears to differ in no significant feature from typical *B. parviflora* of the Port Jackson region. Both entities are here regarded as conspecific with *B. parviflora*.]

### ZIERIA Sm. (1798)

1. Leaves *simple*, ovate-oblong, with recurved margins, 8-12 mm. long almost *sessile*, *tomentose*, *lemon-scented*; flowers 1-3 in axils; petals 3-4 mm. long, pink or white (dwarf shrublet, mainly far western on sandy soils):

*Z. veronicea* (F. Muell.) Benth. *Flor. aust.* 1: 305 (1863).

*Boronia veronicea* F. Muell. in *Trans. phil. Soc. Vict.* 1: 11 (1855).

*Vern.*: Pink Zieria. *Distr.*: BCSWX—also S.A., Tas.

—Leaves *trifoliolate*

2. Plants beset *all over* with a *grey-velvety tomentum*; leaflets oblong, 1-3 cm. long, their margins *revolute*; cymes dense but few-flowered; petals white or pink, 3-5 mm. long (shrub of E. Gippsland):

*Z. cytisoides* Sm. in Rees *Cyclopædia* sub *Zieria* n. 4 (1818).

*Vern.*: Downy Zieria. *Distr.*: SVWXZ—also Tas., N.S.W., Qd.

—Plants glabrous to slightly pubescent, but *never velvety*

3. Leaflets <1 cm. long, *subsessile* on stem and *appearing whorled*; flowers pinkish, very few in cymes *longer than* leaves, the petals 3-5 mm. long (rare ericoid shrub of rocky ranges—near Maldon & Strathbogie):

*Z. aspalathoides* A. Cunn. ex Benth. *Flor. aust.* 1: 305 (1863).

*Vern.*: Whorled Zieria. *Distr.*: MN—also N.S.W., Qd.

—Leaflets >1 cm. long, surmounting an *elongated petiole*; cymes *shorter than leaves*

4. Branchlets and petioles *pubescent* with short stellate hairs, *never glandular*; leaflets mostly 2-4" long (and  $\frac{1}{2}$ -1" wide), glabrous and often shining above, but  $\pm$  *grey-pubescent beneath*; petals 4-5 mm. long (frequent tall shrub or small tree of humid mountain gullies):

*Z. arborescens* Sims in *Curtis's bot. Mag.* sub t. 1395 (1811).

*Z. smithii* Andr. var. *macrophylla* (Bonpl., *ut sp.*) Benth. *Flor. aust.* 1: 307 (1863).

*Illust.*: Fitch in *Curtis's bot. Mag.* 75: t. 4451 (1849), as *Z. macrophylla*; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 460, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 87 (1967), as *Z. smithii*.

*Vern.*: Stinkwood (Forest Zieria). *Distr.*: CDKNPSTWZ—also Tas., N.S.W.

—Branchlets and petioles *glabrous* or nearly so,  $\pm$  *tuberculate-glandular*; leaflets <2" long, *glabrous above and beneath*; petals 2-4 mm. long (E. Gippsland shrub 2-6 ft. high):

*Z. smithii* Andr. *Bot. Repos.* 10: t. 606, col. (1810).

*Illust.*: Andrews (*l.c.*); Adam in Ewart, *Handb. For. Trees Vict.* t. 43 (1925); Mercer in Hurst, *Poison. Plants N.S.W.* 212 (1942); Edwards in *Curtis's bot. Mag.* 34: 1395, col. (1811).

*Vern.*: Sandfly Zieria. *Distr.*: WZ—also N.S.W., Qd.

[A population on Genoa Peak, far E. Vic., has leaflets exceptionally small (only 1-2 cm.  $\times$  1-3 mm.), with correspondingly short congested cymes.]

## ERIOSTEMON Sm. (1798)

1. Leaves *pungently pointed*, smooth, 10-15 mm. long; flowers *solitary* in axils, white (rosy-red in bud), 4-6 mm. long, gland-dotted (low heath-like bush of far west and southern Mallee):

*E. pungens* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 156 (1838).

*Phelialium pungens* (Lindl.) Benth. *Flor. aust.* 1: 338 (1863).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 132, col. (1968).

*Vern.*: Prickly Wax-flower. *Distr.*: BCDFGJ—also S.A., N.S.W.

—Leaves *never* pungent; flowers often in clusters

2

2. Leaves  $\pm$  1 mm. wide

5

Leaves  $>2$  mm. wide

3

3. Leaves *obovate*, 5-10 mm. long, retuse or the apex recurved,  $\pm$  glaucous, thick, with inconspicuous midrib; flowers showy, pedicellate, solitary or sometimes paired on a short peduncle (straggling, chiefly western shrub):

*E. verrucosus* A. Rich. in *Voy. l'Astrolabe (Bot.)* 2: 74, t. 26 (1834).

*E. obovalis* sens. Ewart *Flor. Vict.* 705 (1931) atque auctt. plur., non A. Cunn. (1825).

*Illust.*: Richard (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 324, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 83 (1967);

Brooks, *Aust. native Plants* t. inter 64 & 65 (1959), as *E. verrucosa*.

*Vern.*: Fairy Wax-flower. *Distr.*: CDHJMNSW—also S.A., Tas., N.S.W.

—Leaves *oblong to oblanceolate*, mostly  $>2$  cm. long, flat, the apex  $\pm$  mucronate (tall shrubs of E. highlands)

4

4. Flowers *several*, in an axillary umbel with conspicuous peduncle; carpels  $\pm$  beaked; leaves *broadly oblanceolate* to linear-lanceolate, *pointed*, 1-4" long:

*E. myoporoides* DC. *Prodr.* 1: 720 (1824).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 429, col. (1968); Ewart, *Flor. Vict.* fig. 283 (1931); Galbraith, *Wildflowers Vict.* ed. 3: t. 84 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 233 (1970).

*Vern.*: Long-leaf Wax-flower. *Distr.*: NPRSVWZ—also N.S.W., A.C.T., Qd.

—Flowers mostly *solitary* but, if ever 2-3 in axils, then *without* a common peduncle; carpels *never* beaked; leaves *oblong to oblanceolate*, obtuse, mostly  $<1\frac{1}{2}$ " long (tall shrub or tree of E. Gippsland):

*E. trachyphyllus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 99 (1855).

*Illust.*: Pescott, *Wild Life (Melb.)* 1: 24 (Oct. 1938).

*Vern.*: Rock Wax-flower. *Distr.*: SVWZ—also N.S.W.

5. Leaves 1-4 mm. long, *straight*,  $\pm$  claviform, *obtuse*, with a few large *tubercles*; flowers *terminal*, solitary or few together, 4-6 mm. long:

*E. difformis* A. Cunn. ex Endl. et al. *Enum. Plant. Hueg.* 15 (1837).

*E. gracilis* sens. Ewart *Flor. Vict.* 705 (1931), non R. Graham (1834).

*Illust.*: Galbraith, *Aust. Plants 1<sup>a</sup>*: 7 (1960).

*Vern.*: Small-leaf Wax-flower. *Distr.*: ABCDHJM—also W.A., N.S.W., Qd.

[Corollas are typically hairy on the outside, but Grampians and some Mallee populations have *glabrous* petals (except for occasional marginal cilia).

The *E. gracilis* described by Graham in *Edinb. new phil. J.* 16: 175 (1834) was almost certainly referable to N.S.W. *Philotheca salsolifolia* (Sm.) Druce—*teste* P. G. Wilson.

In *Nuytsia 1<sup>a</sup>*: 31 (1970), P. G. Wilson has segregated and described as a new species *E. angustifolius*, differing from *E. difformis* in the *glabrous* outer surfaces of its petals, slightly longer anthers (1-1.5 mm.) but shorter cocci ( $\pm 3$  mm.). This taxon is often co-extensive with *E. difformis* over the southern part of the latter's range (CDM), including Bendigo district.]

—Leaves 10-15 mm. long,  $\pm$  upward-curving, *acutely pointed*, thick, *concave beneath*; flowers *axillary* and solitary (extremely rare plant of Myrning district near Bacchus Marsh, where perhaps now extinct):

*E. scaber* Paxton in *Paxton's Mag. Bot.* 13: 127 (1846).

*Illust.*: *Paxton's Mag. Bot.* 13: t. opp. 127, col. (1846).

*Vern.*: Rough Wax-flower. *Distr.*: N—also N.S.W., Qd.

#### CROWEA Sm. (1798)

*C. exalata* F. Muell. in *Trans. phil. Soc. Vict.* 1: 11 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 213, col. (1968); Galbraith, *Aust. Plants 1<sup>a</sup>*: 2 (1960); Burbidge, *Flor. Aust. Cap. Terr.* fig. 234 (1970).

*Vern.*: Small Crowea. *Distr.*: HMSVWZ—also N.S.W., A.C.T.

[*C. saligna* Andr. *Bot. Repos.* 2: t. 79, col. (1800) is a taller plant with *prominently angled* branchlets, longer (1-2") acute leaves and larger petals (12-18 mm. long). It is recorded in Ewart's *Flor. Vict.* 704 (1931) on the basis of a single collection from C. Walter's herbarium, reputed to have been made in Oct. 1891 on Pine Mountain (far N.E.) where *C. exalata* certainly grows. No further occurrences have been noted in the State this century, and it is considered either that the species is now extinct here or, what seems more likely, that the old record itself is erroneous—it is well known that many mixtures of specimens and locality data occurred in Walter's herbarium.]

In their *Handb. vasc. Plants Sydney District* 319-320 (1962) Beadle, Evans and Carolin have submerged the genus *Crowea* again under *Eriostemon*, and have even relegated *C. exalata* to varietal rank under *E. crowei* F. Muell. (syn. *C. saligna* Andr.). If this course be adopted, then it becomes obligatory to establish the new combination "*E. salignus*" to replace *E. crowei*.]

#### PHEBALIUM Vent. (1805)

1. Plant invested with glistening, *scurfy*, *fringed*, *peltate scales*, especially on calyces and under-surfaces of leaves; flowers often bright yellow; leaves never pungent-pointed



Plant glabrous or pubescent, without scurfy scales; flowers usually white [pale yellow only in the alpine *P. phyllicifolium*] 2

2. Leaves pungent-pointed, linear, scabrid; flowers crowded at ends of short branches (low, dense, coarsely hairy, rare bush of Pine Mountain in far N.E.):

*P. sp.* [aff. *P. diosmeum* A. Juss. in *Mem. Soc. Hist. nat. Paris* 2: 135, t. 11 fig. 3 (1825)].

*Vern.*: Phebalium. *Distr.*: V.

[True, blunt-leaved *P. diosmeum* has been recorded for Victoria (Genoa R.) by P. G. Wilson in *Nuytsia* 1<sup>1</sup>: 105 (1970), but it is probable that the collection (1880) came from N.S.W.]

—Leaves not pungent

3. Flowers pale yellow, occupying upper axils; leaves whitish beneath, crowded, linear, with revolute margins; ovary pubescent (alpine or subalpine): 3

*P. phyllicifolium* F. Muell. in *Trans. Vict. Inst.* 1: 32 (1855).

*Vern.*: Alpine Phebalium. *Distr.*: SVW—also N.S.W.

—Flowers white, terminal; leaves green beneath; ovary glabrous 4

4. Leaves truncate,  $\pm$  bilobed and sometimes dilated at apex, oblong (often narrowly so), usually  $> \frac{1}{2}$ " long, sometimes dentate; carpels 2-4 (non-tuberculate, highly aromatic plant, mostly in humid, sheltered montane gullies):

*P. bilobum* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 177 (1838).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 9, col. (1855), as *P. truncatum*.

*Vern.*: Notched Phebalium. *Distr.*: DJPST—also Tas.

—Leaves rounded or pointed at apex (never truncate), up to  $\frac{1}{2}$ " long; carpels 5 (plants of open or dryish rocky places) 5

5. Branchlets coarsely tuberculate; leaf lustrous, smooth,  $\pm$  irregularly crenulate, remaining straight when dry,  $> 5$  mm. long and acute at apex (except in a form at Pine Mountain, far N.E. Vic., which has blunt,  $\pm$  orbicular leaves only 3-5 mm. long):

*P. lamprophyllum* (F. Muell.) Benth. *Flor. aust.* 1: 340 (1863).

*Eriostemon lamprophyllum* F. Muell. in *J. pharm. Soc. Vict.* 2: 43 (1858).

*Vern.*: Shiny Phebalium. *Distr.*: NSVWZ—also N.S.W.

—Branchlets minutely hairy but without tubercles; leaf dull, muriculate, entire, drying with recurved apex, 3-5 mm. long, very obtuse, almost rotund; pedicels very short (very rare low shrub of W. Wimmera):

*P. brachyphyllum* Benth. *Flor. aust.* 1: 341 (1863).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 963 on p. 535 (1952); Black, *Trans. roy. Soc. S. Aust.* 58: t. 10 opp. 184 (1924).

*Vern.*: Phebalium. *Distr.*: C—also S.A.

6. Leaves neither emarginate at apex *nor* bearing large tubercles 8  
 Leaves  $\pm$  cuneate, *emarginate* or *even bilobed* at apex, covered with *large glandular tubercles*; flowers *terminal and umbellate*; calyx truncate 7
7. Leaves only 2-4 mm. long, *obovate*, the midrib quite *obscure*; flowers *pale yellow*, on pedicels <3 mm. long (rare plant of Bendigo, King-  
 ower & Dunolly districts):

*P. obcordatum* A. Cunn. ex Benth. *Flor. aust. 1*: 342 (1863).

*Vern.*: Dainty Phebalium. *Distr.*: M—also N.S.W.

—Leaves 5-15 mm. long, *linear-cuneate* to narrowly obovate, the midrib *hardly prominent* beneath, the margins *recurved* and sometimes almost concealing the under-surface; flowers *bright yellow*, on pedicels 3-7 mm. long; scales on petals usually *pallid*, the largest not >0.5 mm. diam. (Mallee and upper Snowy R.):

*P. glandulosum* Hook. in Mitch. *J. Exped. trop. Aust.* 199 (1848).

*Vern.*: Phebalium. *Distr.*: CW—also S.A., N.S.W., Qd.

—As for the last, but midrib of channelled leaves *very prominent*, their margins *not recurved*, and largest *ferruginous* scales on petals 0.5-1 mm. diam. (N.W. Mallee):

*P. bullatum* J. M. Black in *Trans. roy. Soc. S. Aust.* 46: 462, t. 47 (1916).

*Illust.*: Black (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 668 (1952).

*Vern.*: Desert Phebalium. *Distr.*: ABCFG—also S.A.

8. Flowers *axillary, solitary* or very few together, the calyx-lobes triangular; ovary *glabrous*; leaves *broadly ovate*, 10-15 mm. long, *obtuse*, almost *flat*, the upper surface glabrous and shiny, the lower white-scurfy and *without* prominent midrib (Macalister R. sources and Mt. Elizabeth—apparently endemic):

*P. sp.* [aff. *P. squameum* (Labill.) Engl.]

*P. ovatifolium* sens. Ewart *Flor. Vict.* 709 (1931), *non* F. Muell. in *Trans. phil. Soc. Vict.* 1: 99 (1855).

*Vern.*: Phebalium. *Distr.*: SW.

[P. G. Wilson in *Nuytsia* 11: 94 (1970) has described this taxon as a new subspecies *coriaceum* of *P. squameum* (Labill.) Engl. On p. 95 (*l.c.*) he also provides an English description of an apparently new species (aff. *P. squameum*, but differing in its silvery-lepidote sepals, petals and ovary); only a single collection is cited—from Woods Point (1892), but incorrectly attributed to N.S.W.]

—Flowers *terminal*, or else numerous in *axillary corymbs* 9

9. Leaf-margins *flat* or *slightly recurved*; leaves >1.5 mm. wide; flowers *pale yellow, creamy or white* 11  
 Leaf-margins *strongly revolute*; leaves narrow-linear to  $\pm$  *terete*, 5-15 mm. long,  $\pm$  1 mm. wide; flowers bright *chrome-yellow* (Mallee plants) 10

10. Leaves *smooth*; pedicels *slender*, 4-5 mm. long; calyx-lobes *obsolete*; scales on petals *fine*, not >0.3 mm. diam. (Little Desert & Grampians):

*P. stenophyllum* (Benth.) Maiden & Betche *Census N.S.W. Plants* 116 (1916).  
*P. squamulosum* Vent. var. *stenophyllum* Benth. *Flor. aust.* 1: 343 (1863).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 82 (1967).

*Vern.*: Phebalium. *Distr.*: BCDJ—also S.A., N.S.W.

—Leaves *scabrid*; pedicels *stout*, 4-5 mm. long; calyx-lobes *manifest*, *triangular*, acute,  $\pm$  2 mm. long; scales on petals *coarse*, 0.5-1 mm. diam. (southern Big Desert where becoming rare):

*P. lowanense* J. H. Willis in *Vict. Nat.* 73: 196 (1957).

*Vern.*: Phebalium. *Distr.*: BC—also S.A. (near Victorian border).

11. Inflorescences *axillary*, corymbose; flowers *white*; ovary *glabrous*; leaves narrow-lanceolate, nearly flat,  $\frac{1}{2}$ -3" long or more, *silvered* on underside (tall rain-forest shrub or small tree of Otway Ranges):

*P. squameum* (Labill.) Engl. in Engl. & Prantl *Natürl. PflFam.* III 4: 141 (1896).  
*Eriostemon squameus* Labill. *Nov. Holl. Plant. Specim.* 1: 111, t. 141 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 399, col. (1968); Adam in Ewart, *Handb. For. Trees* t. 45 (1925), as *P. billardieri*; Rosser, *Wildflowers Vict.* 69, col. (1968).

*Vern.*: Satinwood. *Distr.*: JK—also Tas., N.S.W., Qd.

—Inflorescences *terminal*; flowers *pale yellow*; ovary densely *scaly* 12

12. Leaves 1-5 cm. long, oblong-lanceolate or linear, their upper surfaces *dull* (tall forest shrub):

*P. squamulosum* Vent. *Jard. Malm.* 2: t. 102 (1805).

*Illust.*: Sulman, *Some familiar Wild Flowers* t. 30 (1913); Engler, *Natürl. PflFam.* III, 4: 141 (1896); Everard, *Wild Flowers World* t. 138, fig. E col. (1970).

*Vern.*: Forest Phebalium. *Distr.*: NSWZ—also N.S.W., Qd.

—Leaves mostly <1 cm. long, their upper surfaces *shiny* (dense, alpine to subalpine bushes rarely >3 ft. high) 13

13. Leaves *elliptical*, 1.5-2.5 mm. wide, the midrib *apparent*; pedicels *slender*, their scales *entire*, smooth and appressed; calyx-lobes *obsolete* or quite rudimentary:

*P. squamulosum* Vent.

var. *alpinum* (F. Muell.) Benth. *Flor. aust.* 1: 343 (1863).

*Eriostemon alpinus* F. Muell. *Fragm. Phyt. Aust.* 1: 103 (1859);

*P. podocarpoides* F. Muell. in *Trans. Vict. Inst.* 1: 31 (1855).

*Vern.*: Phebalium. *Distr.*: RSVW—also N.S.W.,

—Leaves *obovate to oblanceolate*, 3-7 mm. wide, the midrib *obscure* and upper surfaces of young leaves  $\pm$  tomentose; pedicels *stout*, with *torn shaggy* scales; calyx-lobes shallow but *evident*, with minute green tips:

*P. ozothamnoides* F. Muell. in *Trans. Vict. Inst.* 1: 31 (1855).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 232 (1970).

*Vern.*: *Phebalium*. *Distr.*: VWZ—also N.S.W., A.C.T.

[P. G. Wilson in *Nuytsia* 1<sup>1</sup>: 86 (1970) has relegated this taxon to subspecific rank under *P. squamulosum*, ascribing to it great variability.

In his *Flor. Vict.* 708 (1931), Ewart admits *Phebalium dentatum* Sm. in Rees *Cyclopædia* 27: sub *Phebalium* n. 2 (1814), with the remark: "confined to S.W. Victoria, on the Grampians and uncommon". The basis for such a record remains unknown to the writer, and the only specimen at Melbourne Herbarium purporting to have come from Victoria is labelled "East Gippsland, Oct. 1897" in C. Walter's hand. Mixing of specimens and locality data occurred frequently with Walter's herbarium, and it is most unlikely that his collection of *P. dentatum* came from E. Gippsland at all. This N.S.W. shrub is tall and pubescent, with linear and often minutely toothed leaves 1-3" long; its small pale flowers are borne in short axillary, umbel-like racemes.]

#### MICROCYPBE Turcz. (1852)

Upper branches and floral leaves *whitish-tomentose*; leaves *scattered*, widely *spreading*, with *many small* glandular tubercles, 4-8 mm. long; flowers 5-20 per head; fruiting cocci *pitted*:

*M. pauciflora* Turcz. in *Bull. Soc. Nat. Moscou* 25<sup>2</sup>: 167 (1852).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 669 (1948); Black, *Trans. roy. Soc. S. Aust.* 43: t. 7 inter 44 & 45 (1919).

*Vern.*: Yellow Microcypbe. *Distr.*: B (Lake Albacutya to Murrayville)—also W.A., S.A.

Upper branches and floral leaves appearing  $\pm$  *reddish*; leaves *crowded*, *suberect*, with *few large* tubercles, 2-4 mm. long,  $\pm$  conical; flowers 10-12 per head; fruiting cocci *transversely wrinkled*:

*M. multiflora* Turcz. in *Bull. Soc. Nat. Moscou* 25<sup>2</sup>: 166 (1852).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 670 (1948); Black, *Trans. roy. Soc. S. Aust.* 43: t. 7 inter 44 & 45 (1919).

*Vern.*: Red Microcypbe. *Distr.*: ABCG—also W.A., S.A.

#### ASTEROLASIA F. Muell. (1855)

1. Leaves *shiny and glabrous* above, mostly 4-8 mm. long,  $\pm$  *oblong*, with *revolute margins*; flowers sessile, solitary or few (alpine under-shrub, with parsnip-like odour when crushed):

*A. trymalioides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 10 (1855).

*Pleurandropsis trymalioides* (F. Muell.) anon. in *Census Plants Vict.*  
(Field Nats Cl. Vict.): 40 (1923).

*Vern.*: Alpine Star-bush. *Distr.*: SVZ—also N.S.W.

—Leaves *dull and pubescent* above, their margins *flat* or nearly so 2

2. Leaves *scattered*, 1-2.5 cm. long, *obovate to oblanceolate*, *scabrid* above with scattered stellate hairs; flowers *pedicellate*, lemon-yellow, 14-18 mm. across, 1 to several together; stigma very shortly and *broadly lobed* (slender shrub to 4 ft. tall, in eastern highlands chiefly south of Divide):

*A. asteriscophora* (F. Muell.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 606 (1917).

*Phebalium asteriscophorum* F. Muell. in *Trans. Vict. Inst.* 1: 31 (1855);

*A. muelleri* Benth. *Flor. aust.* 1: 350 (1863).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 85 (1967), as *A. muelleri*.

*Vern.*: Lemon Star-bush. *Distr.*: DNRSVWZ.

—Leaves *densely crowded*, <1 cm. long, *broadly cuneate*, retuse, the upper surfaces *densely grey-tomentose*, flowers *sessile, solitary*, golden-yellow; stigma deeply cleft into 5 *linear lobes* (low shrub of Grampians):

*A. phebaliioides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 10 (1855).

*Pleurandropsis phebaliioides* (F. Muell.) Baill. in *Adansonia* 10: 306 (1872).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 89, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 86 (1967).

*Vern.*: Downy Star-bush. *Distr.*: CD—also ?W.A.

[The genus *Pleurandropsis* was erected by Baillon (*l.c.*) in 1872 and distinguished from *Asterolasia* by its *free styles* (tightly appressed only below) with thickened clavate apices—they are united and filiform with lobed peltate stigma in typical *Asterolasia*. The degree of fusion of styles (and consequent lobing of stigma), however, is quite variable within this group and separation at the generic level seems hardly warranted.]

#### CORREA Andr. (1798)

1. Petals *cohering* (at least near centre of corolla) until after they fall, greenish-yellow, pink or red 3  
Petals *separating* to the base before white or blue-green corolla falls 2
2. Branches and leaves *coarsely stellate-hairy*; calyx with 4 *lanceolate lobes* that are longer than tube; corolla about 1" long, *blue-green* or purplish (Grampians and far west):

*C. æmula* (Lindl.) F. Muell. *Fragm. Phyt. Aust.* 1: 3 (1858).

*Didimeria æmula* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 197 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 113, col. (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 14 (1886); Brooks, *Vict. Nat.* 76: 138 (1959).

*Vern.*: Hairy Correa. *Distr.*: CDJ—also S.A.

—Branches and lower surfaces of leaves with a *fine, close*, greyish or rusty stellate indumentum; calyx *truncate*, minutely 4-toothed or entire; corolla <1" long (usually  $\pm$  15 mm.), with entirely free spreading white petals (coastal plant):

**C. alba** Andr. *Bot. Repos.* 1: t. 18 (1798).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 284, col. (1968); Bishop, *Wild Life* 7: 53 (1945); *ibid.* 8: 42 (1946); Banks & Solander, *Bot. Cook's Voy.* 1: t. 32 (1900); Garnet, *Wildflowers Wilson's Prom.* fig. 539 (1971).

*Vern.*: White Correa. *Distr.*: EKNPTWZ—also S.A., Tas., N.S.W.

[The var. *pannosa* P. G. Wilson in *Trans. roy. Soc. S. Aust.* 85: 40 (1961), of which var. *rotundifolia* (Lindl., *ut sp.*) Benth. 1863, *non* DC. (1824), is a synonym, is more coarsely and darkly stellate-tomentose, with small  $\pm$  orbicular leaves (to 12 mm. wide) and smaller, often pinkish flowers on shorter pedicels (< 2 mm. long). It occurs along the far S.W. coast and on the limestone tracts of the Lower Glenelg R., extending into South Australia.]

3. Tall shrub or small tree (to 20 ft. when in mountain gullies); calyx with *coarse, rusty*, stellate vestiture and 4 short but definite teeth; 8 staminal filaments all *equally thread-like* (leaves glabrous and often shining above, 1-3" long; corolla greenish-yellow, rarely red):

**C. lawrenciana** Hook. *J. Bot., Lond.* 1: 254 (1834-35).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 431, col. (1968); Adam in Ewart, *Handb. For. Trees* t. 46 (1925); Wilson, *Aust. Plants* 11: 17 (1962); Reeves in *Vict. Year Book* 76: t. opp. 19 (1962); Burbidge, *Flor. Aust. Cap. Terr.* fig. 231 B (1970).

*Vern.*: Mountain Correa. *Distr.*: DJKNRSTVWZ—also Tas., N.S.W., A.C.T.

[The red-flowered varieties *rosea* P. G. Wilson in *Trans. roy. Soc. S. Aust.* 85: 48 (1961) and *genoensis* P. G. Wilson *l.c.* 50 (1961) are both restricted in Victoria to the far N.E. and to E. Gippsland respectively. The first differs from the typical form in its relatively narrower, subcoriaceous leaves and pale rosy-red flowers, the latter in its prominently *gland-dotted* calyx with long acuminate lobes.]

—Shrubs of more open places, including heathlands; calyx *not* rusty, minutely toothed or entire (except in unusual forms of *C. reflexa* filaments of the 4 stamens opposite the petals *dilated in lower half* 4

4. Bracteoles *deciduous* in bud, 4-7 mm. long; leaves always *glabrous* above often shining, rounded to *cuneate* at base; anthers always *well exerted* (bush to 9 ft. high, typically of rocky places and sometimes riparian):

**C. glabra** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 48 (1838).

*Illust.*: Reeves, *Wild Life* 7: 52 (1945), as *C. reflexa* var. *glabra*; Wilson, *Aust. Plants* 11: 15 (1962).

*Vern.*: Rock Correa. *Distr.*: CJN—also S.A., N.S.W.

[In *Trans. roy. Soc. S. Aust.* 85: 31-32 (1961) P. G. Wilson retains as a distinct species *C. schlechtendalii* H. Behr in *Linnaea* 20: 630 (1847), ascribing it to the Dimboola-Nhill region, W. Wimmera, Vic. The only significant differences from *C. glabra* would appear to be a shorter bracteole (2-3 mm. long) and constantly red-and-green corolla; but these distinctions seem to be at the varietal rather than specific level, when compared with those much greater divergences existing among forms of *C. reflexa*.]

—Bracteoles persistent; leaves often *scabridulous* above, rounded to *cordate* at base; anthers often only partly exerted from corolla (variable, widespread shrub 1-4 ft. high):

**C. reflexa** (Labill.) Vent. *Jard. Malm.* 1: sub t. 13 (1803).

*Mazeutoxeron reflexum* Labill. *Voy. Rech. La Pérouse* 2: 66, t. 19 (1800);

*C. rubra* Sm. in Rees *Cyclopædia* 10: sub Correa n. 3 (1807);

*C. rubra* var. *virens* Ewart *Flor. Vict.* 695 (1931);

*C. speciosa* J. Donn ex Andr. *Bot. Repos.* 10: t. 653, col. (1812).

*Illustr.*: Labillardière (*l.c.*); Reeves in Garnet, *Vegetation Wyperfeld Nat. Park* 18 (1965); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 24, 25, col. (1968); Ewart, *Flor. Vict.* 695 fig. 281 (1931), as *C. rubra*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 231 A (1970); Garnet, *Wildflowers Wilson's Prom.* t., col. n. 540 opp. 30 (1971); Everard, *Wild Flowers World* t. 138 fig. c, col. (1970), as var. *cardinalis*.

*Vern.*: Common Correa. *Distr.*: BCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[In Victoria, a noteworthy variety of this most polymorphic species is var. *cardinalis* (F. Muell. ex Hook., *ut sp.*) A. B. Court in *Vict. Nat.* 73: 175 (1957) of South Gippsland. Here the relatively narrow, oblong leaves are smooth and *glabrous* above, the large flowers (3-4 cm. long) brilliantly red. A rather similar plant, but with leaves coarsely *scabrid* on the upper surfaces, occurs in the western Grampians; this is further remarkable in having 4 deltoid processes between the normal calyx-lobes, giving the calyx an 8-toothed appearance. P. G. Wilson in his "Taxonomic revision of the genus *Correa* (Rutaceæ)", *Trans. roy. Soc. S. Aust.* 85: 35 (1961), suggests that this Grampians population is a hybrid swarm involving *C. reflexa* and *C. decumbens* F. Muell. (which also has a prominently 8-toothed calyx); but, since the latter S.A. species is not known to occur within 240 miles of the Grampians, this postulation is surely open to question.

A population that seems best referred to *C. reflexa* var. *nummulariifolia* (Hook. f., *ut C. speciosa* var.) P. G. Wilson *l.c.* 30 (1961) is apparently confined to sea-cliffs at the mouth of Parker R. near Cape Otway. This variant, frequent on certain islands of Bass Strait and on Kangaroo Id, S.A., has rigid broadly ovate leaves (finely and densely tomentose beneath) and narrow greenish-white corollas only  $\pm 2$  cm. long.

Natural hybrids between *C. reflexa* and *C. alba* (on E. Vic. coasts), also between *C. æmula* and *C. reflexa* (Ararat-Grampians region) are recorded by Wilson in his revision—*l.c.*, pp. 40 & 44 respectively.

In mountain forests of the Latrobe & Bunyip R. watershed, between Powelltown and Beenak, is a widespread population having the foliage and corolla as in typical *C. reflexa*, but with conspicuous filiform bracteoles and long calyx-lobes comparable to those in *C. æmula*; it may warrant recognition at the species level.

It is singular that *C. backhousiana* Hook. of Tasmanian coasts and King Id has not appeared in Victoria. This tall bush, with branches and lower surfaces of the ovate leathery leaves *closely tomentose*, has creamy flowers  $\pm 1''$  long on pedicels 3.5-5 mm.]

## ACRONYCHIA Forst. &amp; Forst. f. (1776)

*A. oblongifolia* (A. Cunn. ex Hook.) Endl.-ex Heynhold *Nom. bot. hort.* 2: 8 (1846).

*Cyminosma oblongifolia* A. Cunn. ex Hook. in *Curtis's bot. Mag.* 61: t. 3322 col. (1834);

*A. lævis* sens. Ewart *Flor. Vict.* 693 (1931), atque auctt. Aust. var., non Forst. & Forst. f. (1776).

*Illust.*: Hooker (*l.c.*); Adam in Ewart, *Handb. For. Trees* t. 47 (1925), as *A. lævis*; *Agric. Gaz. N.S.W.* 22: fig. 3 opp. 726 (1911), as *A. lævis*.

*Vern.*: Yellow-wood. *Distr.*: WZ—also N.S.W.

[The South African ericoid shrub, *Agathosma apiculata* E. Mey., appeared at Coode Id (near mouth of Yarra R.) in Nov. 1912, but failed to persist; it has crowded, squarrose, reflexing leaves and small purplish flowers congested in terminal heads.]

## Family \*SIMAROUBACEÆ

## \*AILANTHUS Desf. (1788)

\**A. altissima* (Mill.) Swingle in *J. Wash. Acad. Sci.* 6: 495 (1916).

*Toxicodendron altissimum* Mill. *Gdnrs. Dict.* ed. 8: n. 10 (1768);

*A. glandulosa* Desf. in *Mem. Acad. Sci. Paris* 1786: 265, t. 8 (1789).

*Illust.*: Desfontaines (*l.c.*); *Bull. Mo. bot. Gdn* 23: t. 24 (1935); Makino, *Ill. Flor. Jap.* 1023 (1932); Hegi, *Ill. Flor. Mittel-Eur.* 5: 82 (1924), as *A. glandulosa*.

*Vern.*: Tree-of-Heaven. *Distr.*: HMNRT—also N.S.W.

## Family POLYGALACEÆ

1. Sepals *all equal*; capsule *4-horned* at summit; leaves *pungent* (pink-flowered shrub on Mornington Peninsula) \**Muraltia* (p. 344)

Sepals *unequal*, the inner 2 ("wings") much larger and *petaloid*; capsule *not* horned; leaves *never* pungent 2

2. Anterior petal ("keel") *crested*; capsule *rounded or ovoid*; seeds *glabrous* *Polygala* (p. 341)

Anterior petal *not* crested; capsule *cuneate*; seeds bearing a distal *tuft of long hairs* *Comesperma* (p. 342)

## POLYGALA L. (1753)

1. Plant a *glabrous shrub* 3-6 ft. high; leaves *blunt, obovate to oblanceolate*, 2-3.5 cm.  $\times$  6-12 mm.; flowers 14-18 mm. long, purple-and-green, in short terminal racemes (chiefly coastal)



\**P. myrtifolia* L. *Spec. Plant.* 2: 703 (1753).

*Illust.*: Ewart, *Flor. Vict.* fig. 286 (1931); *Curtis's bot. Mag.* 64: t. 3616, col. (1837);  
Rice & Compton, *Wild Flowers Cape Good Hope* t. 8 fig. 2, col. (1951).

*Vern.*: Myrtle-leaf Milkwort. *Distr.*: NP—also S.A., Tas., N.S.W., N.Z.

—Plant *herbaceous* (from a perennial rootstock), <1 ft. high; leaves *acute*,  
*ovate to lanceolate*, usually <2 cm. long; flowers 5-8 mm. long, bluish  
2

2. Stems and petioles finely *pubescent*; leaves mostly >4 mm. broad, with  
strongly *reticulate venation*, often lustrous; racemes *lateral*; inner  
sepals ("wings") *narrower than* mature capsule (E. Gippsland & far  
N.E.):

*P. japonica* Houtt. *Handl. Plant. Kruidk.* 10: t. 62 fig. 1 (1779).

*P. sibirica* sens. Ewart *Flor. Vict.* 715 (1931), *non* L. (1753);

*P. veronica* F. Muell. in *Trans. Vict. Inst.* 117 (1855).

*Illust.*: Houttyn (*l.c.*); Makino, *Ill. Flor. Jap.* 351 (1924); Burbidge, *Flor. Aust. Cap. Terr.* fig. 237 (1970), as *P. veronica*.

*Vern.*: Dwarf Milkwort. *Distr.*: RVW—also N.S.W., A.C.T.

—Stems and petioles *glabrous*; leaves <4 mm. broad, *not* reticulate;  
racemes *terminal*; inner sepals *wider than* mature capsule (Gembrook  
district):

\**P. vulgaris* L. *Spec. Plant.* 2: 702 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 4: t. 20 (1950); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 20 in part (1940); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>:  
t. 176 fig. 5, col. (1924).

*Vern.*: Common Milkwort. *Distr.*: S—also N.Z.

### COMESPERMA Labill. (1806)

[In Ewart's *Flor. Vict.* 715-717 (1931) species of *Comesperma* were included under a wider circumscription of the South American genus *Bredemeyera* Willd. which has fleshy fruits. Following current procedure by the majority of Australian systematists, *Comesperma* is here retained as a separate generic group.]

- I. Stems and branches *twining*, slender, *almost leafless*; racemes *lateral*,  
loose, elongated; flowers  $\pm$  6 mm. long, clear blue with darker keel,  
rarely white (widespread except in driest and wettest parts):

*C. volubile* Labill. *Nov. Holl. Plant. Specim.* 2: 24, t. 163 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 310, col. (1968); Rosser, *Wildflowers Vict.* 63, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 90 in part (1967); Curtis, *Student's Flor. Tasm.* 1: fig. 18 (1956); Burbidge, *Flor. Aust. Cap. Terr.* fig. 238 (1970).

*Vern.*: Love Creeper. *Distr.*: CDEJKNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Stems *erect*, never twining (shrubs or semi-shrubs with *terminal* inflorescences) 2

2. Branchlets *sulcate*, stout, erect; leaves *absent*; flowers *sessile*, blue, solitary and lateral,  $\pm$  4 mm. long (rigid broom-like shrub of NW Mallee):

*C. scoparium* J. Drumm. in Hook. *J. Bot., Lond.* 2: 369 (1840).

*Vern.*: Broom Milkwort. *Distr.*: AF—also W.A., S.A., N.S.W.

—Branchlets *not sulcate*; flowers *pedicellate* in terminal racemes (heathland plants) 3

3. Small perennials (mostly 1 ft. high or less), the leaves toward top of stems *few and distant* or absent altogether; flowers often blue 5  
Bushy shrubs 1-4 ft. high, the stems copiously *leafy throughout*; flowers rosy-purplish or pink 4
4. Leaves *linear-oblong*,  $\pm$  *acute*, mostly < 8 mm. long, the margins *much recurved* or revolute and apex *recurved*; midrib *conspicuous* beneath; racemes usually *loose* and elongated (widespread on heaths):

*C. ericinum* DC. *Prodr.* 1: 334 (1824):

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 92 (1967); Sulman, *Wild Flowers N.S.W.* 2: t. 12 (1914); Garnet, *Wildflowers Wilson's Prom.* fig. 548 (1971); Morcombe, *Aust. Wildflowers* tt. on [35 & 45], col. (1970).

*Vern.*: Heath Milkwort. *Distr.*: CDJKNPRSTVWZ—also Tas., N.S.W., Qd.

—Leaves *obovate* or *oblong*, very *obtuse*, 7-11 mm. long, *flat and straight*; midrib not apparent beneath; racemes *dense* and short, often appearing  $\pm$  umbellate (chiefly subalps, but also W. Otways & W. Grampians):

*C. retusum* Labill. *Nov. Holl. Plant. Specim.* 2: 22, t. 160 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 518, col. (1968).

*Vern.*: Mountain Milkwort. *Distr.*: DKRSVWZ—also Tas., N.S.W., A.C.T., Qd.

5. Leaves all *linear*, *few* or *absent*; inner sepals ("wings") about *as long as* outer sepals (rush-like plant with elongated racemes to 3" long):

*C. defoliatum* F. Muell. *Plants indig. Colon. Vict.* 1: 189 (1862).

*Illust.*: Forster in Harris, *Wild Flowers Aust.* t. 31, col. (1947).

*Vern.*: Leafless Milkwort. *Distr.*: BDEJKNTZ—also Tas., N.S.W., Qd.

—Leaves *green*, *elliptic-oblong* to lanceolate, the midrib *not* conspicuous beneath; racemes *elongated* (1-2"); flowers *blue*; inner sepals *free*, *longer than* outer sepals (3-4 mm.):

*C. calymega* Labill. *Nov. Holl. Plant. Specim.* 2: 23, t. 162 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 674 E-F (1948)—capsule & seed.

*Vern.*: Blue-spike Milkwort. *Distr.*: BCDEJKNPTWZ—also W.A., S.A., Tas., N.S.W.

—As for the last, but leaves  $\pm$  *glaucous*, the midrib *conspicuous* beneath, racemes *condensed* (usually  $<1''$  long), flowers *purplish*, outer sepals only  $\pm$  2 mm. long and 2 larger inner sepals ("wings")  $\pm$  *united* (around and W. of Port Phillip):

*C. polygaloides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 7 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 674 A-D (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 13 (1886); Mueller, *Plants indig. Colon. Vict.* t. 8 (1862).

*Vern.*: Small Milkwort. *Distr.*: CDJKN—also W.A., S.A.

#### \*MURALTIA Neck. (1790)

\**M. heisteria* (L.) DC. *Prodr.* 1: 335 (1824).

*Polygala heisteria* L. *Spec. Plant.* 2: 704 (1753).

*Illust.*: Marloth, *Flor. S. Africa* 2<sup>1</sup>: t. 41 (1925); Rice & Compton, *Wildflowers Cape Good Hope* t. 8 (1951); Curtis's *bot. Mag.* 10: t. 340, col. (1796), as *Polygala heisteria*.

*Vern.*: Furze Murlaltia. *Distr.*: P (Morington district)—also S.A., N.S.W.

#### Family EUPHORBIACEÆ

1. Apparent "flowers" consisting of a stalked 3-chambered ovary, several 1-staminate male flowers, and a surrounding *calyx-like involucre* with 4 prominent *lobe-like glands*; individual perianths *absent*; leaves simple, without lobes; plant exuding a bitter *milky latex* if cut or broken Euphorbia (p. 348)  
Flowers distinct, each *bearing a perianth, never involucre*; sap *not milky* 2
2. Leaves very large (4-12" diam.), lustrous, *palmately cleft* into 7-9 bold serrate lobes; flowers in racemes; fruit a softly spiny capsule 15-25 mm. long (tall soft-wooded poisonous shrub) \*Ricinus (p. 348)  
Leaves  $<3''$  wide, *never palmately lobed*; fruit  $<15$  mm. long 3
3. Petals *absent* or quite rudimentary 5  
Petals *present, white*; flowers manifestly pedicellate, in *corymbs* or loose *terminal clusters*; style-branches 4
4. Stipules *absent*; petals usually 6, conspicuous and *longer* (10-15 mm.) than calyx; stamens *numerous, united* in a central column; anthers opening by *slits*; capsule *bristly*,  $\pm$  12 mm. long (glabrous woody near-coastal shrub 3-9 ft. tall, eastward from Port Phillip Bay; leaves narrow-linear, opposite or alternate) Ricinocarpos (p. 351)  
Stipules *present*; petals 5, *not* longer than calyx; stamens 5, *free*; anthers

- opening by pores; capsule *smooth*, <12 mm. long (herbs or small semishrubs) *Poranthera* (p. 350)
5. Inflorescence *terminal*, *corymbose*, leafy; anthers 4-locular, opening by pores; ovules 2 per loculus (low glabrous annual, the minute flowers with 5 white sepals) *Poranthera* (p. 350)
- Inflorescence axillary (of single, densely clustered or spicate flowers) or a terminal spike; anthers 2-locular, opening *longitudinally* 6
6. Sepals 3; styles and loculi 2; stamens 8-15 (small glabrous annual with serrate leaves and minute sessile flowers in slender axillary spikes to 2" long) *\*Mercurialis* (p. 348)
- Sepals >3 (usually 5 or 6); styles (if present) and loculi 3 (shrubs, low perennials, or annuals with non-spicate inflorescences) 7
7. Stems green, *3-angled* or compressed and furrowed, *leafless* or nearly so at flowering time; flowers *lateral*, very small, sessile in dense clusters in the axils of small distant scales; styles 3, bilobed (slender broom-like undershrub, the leaves when present oblanceolate,  $\pm$  toothed glabrous and 5-15 mm. long) *Amperea* (p. 353)
- Stems neither triquetrous *nor* leafless at flowering time; habit *not* broom-like 8
8. Leaves *never* grouped in threes, >4 mm. long; styles absent *or* bifid 10
- Leaves glabrous, either in threes *or* <4 mm. long; flowers 1-3 in upper axils; styles present, *simple*; stamens 6-9 (heath-like *or* wiry shrubs) 9
9. Shrub of E. highlands, 2-10 ft. high; leaves *in threes*, oblanceolate, 6-15 mm. long; male flowers on *slender* pedicels 4-7 mm. long; fruit 3-locular, 3-seeded *Micrantheum* (p. 351)
- Shrubs wiry, <2 ft. high; leaves *separate*, ovate-oblong to  $\pm$  orbicular, 2-4 mm. long; male flowers on very *short* pedicels; fruit 1-locular, 1-seeded *Pseudanthus* (p. 351)
10. Stamens *numerous*, *crowded on a receptacle*; ovules 1 per loculus (shrubby, sometimes viscid perennials) 12
- Stamens *few* (<10); styles 3, bifid (non-viscid stipulate shrubs, or annuals, the flowers 1-4 in axils) 11
11. Leaves glabrous *or* with simple hairs, <2 cm. long, *stipulate*, very *shortly stalked*; ovules (and usually seeds) 2 per loculus, the 3 fruitlets 2-valved *Phyllanthus* (p. 346)
- Leaves *grey-tomentose* from a stellate indumentum, 2-4 cm. long, *exstipulate*, *long-stalked* (petioles 2-8 cm.); ovules 1 per loculus, the capsule covered with *silvery peltate scales* (annual herb of far W. & N.W.) *\*Chrozophora* (p. 346)
12. Flowers in dense or interrupted *terminal spikes*; styles long, almost free, densely fringed; leaves *coarsely toothed* or lobed, sometimes with rudimentary stipules, *never* viscid *Adriana* (p. 347)
- Flowers *solitary* in axils; leaves *entire*, *exstipulate*, often glutinous and sticky 13
13. Stamens *cohering* on a *central column*; styles 3, almost *free*, deeply bifid; capsule *ovoid* *or* *oblong* *Bertya* (p. 351)
- Stamens *free* on a *low rounded receptacle*; stigma *sessile*, *entire* or  $\pm$  3-lobed; capsule almost *globular* *Beyeria* (p. 352)

## PHYLLANTHUS L. (1753)

1. Branches, foliage and flowers thinly beset with *small spreading hairs*; leaves never glaucous, obovate to narrowly cuneate, *truncate* and usually emarginate, 3-6 mm. long, the margins often  $\pm$  *recurved* (small, low-growing shrub):

**P. hirtellus** F. Muell. ex Muell.-Arg. in *Linnæa* 32: 22 (1863).

*P. thymoides* Sieber ex Sond. in *Linnæa* 28: 566 (1856-57)—*nomen nudum*;

non *P. hirtellus* (F. Muell., ut *Synostemon* sp.) Muell.-Arg. in DC. (1866)—*nom. illeg.*

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 241 (1970), as *P. thymoides*.

*Vern.*: Thyme Spurge. *Distr.*: CDJNSTWZ—also S.A., N.S.W., A.C.T., Qd.

—Plants *glabrous*; leaves *flat*, often  $\pm$  *glaucous* (tall shrubs or annual herbs) 2

2. Tall *shrub*; leaves  $\pm$  *distichous*, *broadly obovate* to  $\pm$  *orbicular*, obtuse or retuse, often somewhat oblique, 10-15 mm. long; flowers *greenish-yellow*, pendent; capsule 4-5 mm. diam., *without* conspicuous furrows (chiefly coastal):

**P. gunnii** Hook. f. in Hook. *Lond. J. Bot.* 6: 284 (1847).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 298, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 554 (1971).

*Vern.*: Shrubby Spurge. *Distr.*: CPSTVWXZ—also Tas., N.S.W.

—Diffuse *annual*; leaves *oblanceolate* to  $\pm$  *cuneate*, 7-11 mm. long; flowers *white or reddish*; capsule <4 mm. diam., *3-furrowed* (lower Murray Valley):

**P. lacunarius** F. Muell. in *Trans. phil. Soc. Vict.* 1: 14 (1855).

*Illust.*: Gauba, *Vict. Nat.* 65: 183 fig. a (1948), as *P. lucunarius*.

*Vern.*: Lagoon Spurge. *Distr.*: AG—also S.A., N.S.W., Qd, Cent. Aust.

[In Ewart's *Flor. Vict.* 722 & 723 (1931) two other inland species are described, both with the note "very rare, if Victorian". These are *P. trachyspermus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 14 (1855) and *P. fuernrohrrii* F. Muell. *l.c.* 15 (1855), the only near-Victorian specimens in Melbourne Herbarium being labelled "Junction of Darling & Murray River" (Apr. 1887) and "Murray River" (Feb. 1851) respectively. Neither species has been found in the State during the present century, so that the perpetuation of their names in our flora is unjustifiable. *P. trachyspermus* is a small glabrous annual with staminal filaments united in a column, ovoid capsules and large, whitish, crescentic, coarsely rugose seeds; whereas *P. fuernrohrrii* is a hoary-pubescent perennial with free filaments and smooth brown seeds.]

## \*CHROZOPHORA Neck. (1790)

\***C. tinctoria** (L.) Juss. *Euphorb. Gen.* 28, t. 7 fig. 25 sub "*Crozophoar*" (1824).

\**Croton tinctorium* L. *Spec. Plant.* 2: 1004 (1753).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 5: t. 152 fig. 4805, *col.* (1841); Pax in Engler, *Natürl. PflFam.* III 5: fig. 27, 28 F-G (1896); Coste, *Flor. Franc.* 3: fig. 3244 (1906).

*Vern.*: Dyer's Litmus Plant. *Distr.*: AC—also S.A.

### ADRIANA Gaudich. (1825)

1. Leaves *alternate*, on long petioles (plants of E. Gippsland or Mallee) 3  
Leaves *opposite, subsessile* (coastal plants) 2
2. Plant *hoary-pubescent* or tomentose from matted stellate hairs (*except* for the upper surfaces of leaves); styles quite *free* (S. coasts on and west of Wilson Promontory, also Mt. Arapiles):

**A. klotzschii** (F. Muell.) Muell.-Arg. in *DC. Prodr.* 15<sup>2</sup>: 892 (1866).

*Trachycaryon klotzschii* F. Muell. in *Trans. phil. Soc. Vict.* 1: 15 (1855).

*Vern.*: Coast Bitter-bush. *Distr.*: CETP—also S.A.

—Plant *wholly glabrous*; styles *shortly united* at base (rare plant of Port Phillip Heads):

**A. quadripartita** (Labill.) Gaudich. in Freyc. *Voy. aut. Monde (Bot.)* 489 (1830).

*Croton quadripartitum* Labill. *Nov. Holl. Plant. Specim.* 2: 73 t. 223 (1806).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 289, *col.* (1968); Read in Ewart, *Handb. For. Trees* t. 95 (1925); Labillardière (*l.c.*).

*Vern.*: Rare Bitter-bush. *Distr.*: P—also W.A.

3. Leaves *ovate-lanceolate* or broadly rhomboid, often deeply 3-lobed, *acutely* dentate, entirely glabrous to universally tomentose, the veins on upper surface *prominent and impressed*; styles quite *free* (E. Gippsland):

**A. glabrata** Gaudich. in *Ann. Sci. nat. sér.* 1, 5: 223 (1825).

*Vern.*: Eastern Bitterbush. *Distr.*: VWZ—also N.S.W., Qd.

[Glabrous forms are referable to the var. *heterophylla* (Hook., *ut sp.*) Pax in *Pflanzenreich* IV 147 (Heft 44): 18 (1910), and tomentose populations to var. *cunninghamii* (F. Muell., *ut Trachycaryon sp.*) Pax *l.c.* (1910).]

Leaves *oblong-lanceolate*, *bluntly* toothed and sometimes  $\pm$  sinuately lobed, variably stellate-hoary (*never* glabrous), the veins on upper surface rather *indistinct, not* or hardly impressed; styles *shortly united* at base (Mallee):

**A. hookeri** (F. Muell.) Muell.-Arg. in *DC. Prodr.* 15<sup>2</sup>: 891 (1866).

*Trachycaryon hookeri* F. Muell. in *Trans. phil. Soc. Vict.* 1: 16 (1855).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 8 n. 225 (1965).

*Vern.*: Mallee Bitter-bush. *Distr.*: ABCG—also S.A., Cent. Aust.

\**MERCURIALIS* L. (1753)

\**M. annua* L. *Spec. Plant.* 2: 1035 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 177 fig. 2, col. (1924); Coste, *Flor. Franc.* 3: fig. 3248 (1906); Butcher, *New Ill. Brit. Flor.* 1: fig. 826 (1961); Reichenbach, *Icon. Flor. germ.* 5: t. 151 fig. 4801, col. (1841).

*Vern.*: Annual Mercury. *Distr.*: NP—also N.Z.

\**RICINUS* L. (1753)

\**R. communis* L. *Spec. Plant.* 2: 1007 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 679 (1948); Grosse in Maiden, *Weeds N.S.W.* 85 (1920); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: 121 (1924); Bailey, *Standard Cycl. Hort.* 3: 2965 (1935).

*Vern.*: Castor Oil Plant. *Distr.*: ANP—also W.A., S.A., N.S.W., Qd, Cent. Aust., N.Z.

*EUPHORBIA* L. (1753)

1. Leaves *alternate*, exstipulate 4  
Leaves mostly *opposite*, sometimes stipulate, always glabrous 2
2. Plant *prostrate* and matted; leaves *ovoid to broadly oblong*, 3-7 mm. long, ± *oblique* at base; stipules small, white, *lacinate*; involucre glands reddish, minute, *subentire*, ± *reniform*; capsule <2 mm. long (wide-spread on heavier soils):

*E. drummondii* Boiss. *Cent. Euphorb.* 14 (1860).

*Illust.*: Ewart & White, *Proc. roy. Soc. Vict.* new ser. 22: tt. 23 & 24 (1909); Black, *Flor. S. Aust.* ed. 2: fig. 675 A-B (1948); King in Hurst, *Poison Plants N.S.W.* 223 (1942).

*Vern.*: Flat Spurge. *Distr.*: ABCDGLMNRSV—also W.A., S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust.

—Plants *erect*; leaves >1 cm. long; stipules rudimentary or absent 3

3. Leaves very *distant*, *linear*, shortly *petiolate*, 1-4 cm. long; flowering branches widely *dichotomous*, often leafless; involucre glands red, minute, *entire*; capsule ± 4 mm. long (sandy Mallee areas where uncommon):

*E. eremophila* A. Cunn. in Mitch. *J. Exped. trop. Aust.* 348 (1848).

*Illust.*: Mercer in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 119 (1958); Mahood in Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2<sup>1</sup>: 13 fig. 36 (1960); Mercer in Hurst, *Poison Plants N.S.W.* 228 (1942).

*Vern.*: Desert Spurge. *Distr.*: AGH—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Leaves  $\pm$  glaucous, *close, decussate, oblong-lanceolate*, broadly sessile, 4-10 cm. long or more; flowering branches forming *large bracteate umbels* of 2-6 rays; involucre glands greenish, *crescentic* with blunt *swollen horns* 1-2 mm. long; capsule 6-10 mm. long or more (wide-spread weed of waste ground):

\**E. lathyrus* L. *Spec. Plant.* 1: 457 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 676 (1948), as *E. lathyrus*; Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: 147 (1924), as *E. lathyrus*; Butcher, *New Ill. Brit. Flor.* 1: fig. 828 (1961).

*Vern.*: Caper Spurge. *Distr.*: JKNRSTWZ—also S.A., N.S.W., Qd, N.Z.

4. Floral leaves (or bracts) *similar* to the broad stew-leaves; involucre glands *entire, rounded* 7  
 Floral leaves quite *dissimilar* to stem-leaves or, if comparable in size, then plant a tender annual; involucre glands *lunate*, their tips *prolonged into horns* 5
5. Leaves *obovate*, 1-2 cm. long, tender; umbel of 2-3 repeatedly forking rays; glands with long acute horns; seeds *whitish, angular and pitted* (frequent small annual weed of gardens):

\**E. peplus* L. *Spec. Plant.* 1: 456 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 676 in part (1948); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 48, col. (1958); Reichenbach, *Icon. Flor. germ.* 5: t. 140 fig. 4773, col. (1841); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 178 fig. 5, col. (1924); Burbidge, *Flor. Aust. Cap. Terr.* fig. 240 (1970).

*Vern.*: Petty Spurge. *Distr.*: AEHJMNPRSTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Leaves *oblong to linear-lanceolate*; umbel with 3-6 rays; seeds *grey, ovoid, smooth* (perennials) 6

6. Stems *herbaceous*; leaves *bright green, not crowded*, 1.5-3 cm. long; capsule 4 mm. long, *smooth*; glands with very *long slender horns* (chiefly Murray Mallee):

\**E. terracina* L. *Spec. Plant.* ed. 2, 1: 654 (1762).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 681 (1948); Orchard & O'Neil in *J. Dep. Agric. S. Aust.* 61: 237-39 (1957); Gardner in Meadly, *Weeds W. Aust.* 108 col., & 109 (1925); Coste, *Flor. Franc.* 3: fig. 3240 (1906).

*Vern.*: Terracina Spurge. *Distr.*: AER—also W.A., S.A.

—Stems  $\pm$  *woody*; leaves *pale, glaucous, crowded*,  $\pm$  erect and *imbricate*, mostly <1.5 cm. long; capsule 5-6 mm. long, *granular*; glands with *short horns* (far S.W. coast):

\**E. paralias* L. *Spec. Plant.* 1: 458 (1753).

*Illust.*: Butcher, *New Ill. Brit. Flor.* 1: fig. 837 (1961); Coste, *Flor. Franc.* 3: fig. 3235 (1906); Reichenbach, *Icon. Flor. germ.* 5: t. 145 fig. 4789, col. (1841).

*Vern.*: Sea Spurge. *Distr.*: E—also W.A., S.A.



7. Leaves *obovate-cuneate*, narrowed toward base, very *obtus*e, serrulate on upper margins; capsule *smooth*, 3-5 mm. long; glands yellowish, oval, <1 mm. wide (scattered in settled areas):

\**E. helioscopia* L. *Spec. Plant.* 1: 459 (1753).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 49, col. (1958); Butcher, *New Ill. Brit. Flor.* 1: fig. 833 (1961); Reichenbach, *Icon. Flor. germ.* 5: t. 132 fig. 4754, col. (1841); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 177 fig. 5, col. (1924).

*Vern.*: Sun Spurge. *Distr.*: EKPRS—also S.A., Tas., N.S.W., Qd, N.Z.

—Leaves *elliptic*,  $\pm$  *cordate* at base, subacute; capsule *warted*, 2-3 mm. long; glands yellow, suborbicular,  $\pm$  1 mm. wide (Morwell district):

\**E. platyphyllos* L. *Spec. Plant.* 1: 460 (1753).

*Illust.*: Butcher, *New Ill. Brit. Flor.* fig. 831 (1961); Reichenbach, *Icon. Flor. germ.* 5: t. 133 fig. 4758, col. (1841); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: 160 (1924).

*Vern.*: Broad Spurge. *Distr.*: T.

[Shrubby garden species of *Euphorbia* (e.g. *E. dendroides* L. and *E. wulfenii* Hoppe) occasionally persist in small areas, but are not truly naturalized. The Australian (although not Victorian), inland *E. australis* Boiss. appeared on a farm at Yering near Lilydale in Jan. 1937, but apparently soon died out. This prostrate herb differs from *E. drummondii* in being *hairy all over*, with minutely serrate leaves; the Yering form had less hairy involucre than usual, and the whitish glands were only slightly lobed.]

#### PORANTHERA Rudge (1811)

Leaves petiolate, *spathulate to obovate*, obtuse,  $\pm$  *flat*, mostly <1 cm. long; corymbs short; flowers minute, <2 mm. diam. (diffuse annual, very wide-spread except in drier parts):

*P. microphylla* Brongn. in *Bot. Voy. La Coquille* 219, t. 50 (?1829).

*Illust.*: Brongniart (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 410, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 675 L-N (1948); Burbidge, *Flor. Aust. Cap. Terr.* fig. 239 (1970).

*Vern.*: Small Poranthera. *Distr.*: ABCDEHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., N.Z.

Leaves *linear* or narrow-lanceolate, 1.5-5 cm. long, the margins  $\pm$  *revolute*; corymbs long-pedunculate; flowers 2-3 mm. diam. (undershrub to 2 ft. high, confined to far E. Gippsland, also Brisbane Ranges):

*P. corymbosa* Brongn. in *Bot. Voy. La Coquille* 219, t. 50 A (?1829).

*Illust.*: Brongniart (*l.c.*); Grüning in Engler, *Pflanzenreich* IV 147 (Heft 58): 17 (1913).

*Vern.*: Clustered Poranthera. *Distr.*: NZ—also N.S.W., Qd.

[The West., and South Australian, dwarf perennial *P. ericoides* Klotzsch in *Plant. Preiss.* 2: 232 (1848) has crowded, ericoid, rolled linear leaves 1-2 cm. long, and was admitted in Ewart's *Flor. Vict.* 72 (1931) on the basis of a record for "Glenelg Mouth". No Victorian collection exists at Melbourne Herbarium, and the species is omitted from this key.]

## MICRANTHEUM Desf. (1818)

**M. hexandrum** Hook. f. in *Lond. J. Bot.* 6: 283 (1847).

*Illust.*: Maiden, *Ill. N.S.W. Plants* t. 8 (1907); Pax in Engler, *Natürl. PflFam.* III 5: fig. 73 c (1896)—flower; Burbidge, *Flor. Aust. Cap. Terr.* fig. 242 (1970).

*Vern.*: Box Micrantheum. *Distr.*: RSTVWZ—also Tas., N.S.W., A.C.T., Qd (Wyberba in S.E.).

## PSEUDANTHUS Sieber ex Spreng. (1827)

Leaves *convex* beneath, broadly *oblong-elliptic*; male flowers with perianth-segments  $\pm$  2 mm. long, the 3 inner stamens 1 mm. long or more (rigid wiry shrublet, usually of sandy ground):

**P. ovalifolius** F. Muell. in *Trans. phil. Inst. Vict.* 2: 66 (1858).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 332, col. (1968).

*Vern.*: Oval-leaf Pseudanthus. *Distr.*: CJMSTWX—also Tas., N.S.W., Qd.

Leaves almost *flat*,  $\pm$  *orbicular*; perianth segments all  $\pm$  1 mm. long; stamens all  $<$  1 mm. long (densely and divaricately branched shrub of rocky places):

**P. divaricatissimus** (Muell.-Arg.) Benth. *Flor. aust.* 6: 60 (1873).

*Caletia divaricatissima* Muell.-Arg. in *Linnæa* 32: 79 (1863).

*Illust.*: Grüning in *Pflanzenreich* IV 147 (Heft 58): 29 (1913).

*Vern.*: Tangled Pseudanthus. *Distr.*: NSZ—also N.S.W.

## RICINOCARPOS Desf. (1817)

**R. pinifolius** Desf. in *Mém. Mus. Hist. nat., Paris* 3: 459, t. 22 (1817).

*Illust.*: Desfontaines (*l.c.*); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 30, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 91 (1967); Ewart, *Flor. Vict.* fig. 288 (1931); Pax in Engler, *Natürl. PflFam.* III 5: fig. 73 A-B (1896); Scarth-Johnson, *Wildflowers Warm East Coast* 65, col. (1967).

*Vern.*: Wedding Bush. *Distr.*: NPSTWZ—also Tas., N.S.W., Qd.

## BERTYA Planch. (1845)

1. Leaves *oblong-linear*, *flat*, blunt, 2-7 cm. long, 3-8 mm. wide, *whitish-tomentose* beneath; flowers on *short stout pedicels* 3-4 mm. long (rare tall shrub or small tree of far Upper Murray R. and W. Grampians):

**B. findlayi** F. Muell. *Fragm. Phyt. Aust.* 8: 141 (1874).

*Illust.*: Rossiter in Ewart, *Handb. For. Trees* t. 98 (1925); Grüning in *Pflanzenreich* IV 147 (Heft 58): 55 (1913).

*Vern.*: Mountain Bertya. *Distr.*: DV—also N.S.W.

—Leaves *narrow-linear*, with *revolute margins*, mostly  $<$  2 cm. long and  $<$  3 mm. wide; flowers *sessile*

2. Branchlets and young foliage *hoary-greyish* from a stellate indumentum; leaves *non-resinous*, 1-4 cm. long, 1-2 mm. wide; male perianth-lobes  $\pm$  4 mm. long; ovary densely *stellate-hirsute*, except in a singular glabrous mutant at the Bundarra R. bridge N.W. of Omeo (Mallee, Wimmera & Upper Mitta Mitta watershed):

**B. mitchellii** (Sond.) Muell.-Arg. in *Linnaea* 34: 63 (1865).

*Ricinocarpus mitchellii* Sond. in *Linnaea* 28: 563 (1857).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 675 i-k (1948); Mueller, *Key Syst. Vict. Plants* 2: fig. 23 (1886), as *B. oleifolia*; Mueller, *Plants indig. Colon. Vict.* t. 20 (1864/5), as *B. oleifolia*.

*Vern.*: Mitchell Bertya. *Distr.*: ABCFGVW—also S.A.

—Branchlets and foliage *glabrous* or nearly so; leaves manifestly *resinous* and  $\pm$  sticky, <1.5 cm. long, <1 mm. wide; male perianth-lobes  $\pm$  2 mm. long; ovary *glabrous* (rare ericoid shrub of Upper Snowy R.):

**B. cunninghamii** Planch. in Hook. *Lond. J. Bot.* 4: 473 (1845).

*Vern.*: Sticky Bertya. *Distr.*: VW—also ? W.A., N.S.W.

[The inclusion of *B. rotundifolia* F. Muell. in Ewart's *Flor. Vict.* 728 (1931) is quite erroneous. This record was based on a specimen labelled "Queenscliffe to Kinch's, 25.2.1886". The locality has nothing to do with Queenscliff, Vic., but concerns Kangaroo Id (S.A.) where this round-leaved woolly plant is endemic.]

#### Beyeria Miq. (1844)

1. Leaves 1-4" long (*tall*, usually riparian shrubs or small trees of E. Gipps-land) 3  
Leaves  $\pm$  1" long, or less (small or low shrubs of Mallee, coasts and central highlands) 2
2. Lower surfaces of leaves (excepting midrib) shortly *white-tomentose*; leaves to 4 cm. long and to 7 mm. wide, the margins *strongly recurved* (shrub to 4 ft., chiefly of Mallee and along coasts):

**B. leschenaultii** (DC.) Baill. in *Adansonia* 6: 307 (1866).

*Hemistemma leschenaultii* DC. *Regn. Veg. Syst. nat.* 1: 414 (1817)—  
ut "*lechenaultii*".

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 675 G & H (1948).

*Vern.*: Pale Turpentine Bush. *Distr.*: ABCDEGJKNPWS—also W.A., S.A., Tas.

[Extremes of leaf-form are represented in Victoria by the var. *rosmarinoides* Baill. (*l.c.*) of the N.W. Mallee, and var. *latifolia* Grüning in *Pflanzenreich* IV 147 (Heft 58): 71 (1913) from the far S.W. coast. Of intermediate character is var. *ledifolia* (Klotzsch) Grüning *l.c.* 70 (1913), to which Victorian collections from the Lerderderg Gorge and Macalister R. sources have been referred—type of this epithet came from W.A.]

—Lower surfaces of leaves *glabrous*; leaves mostly <1.5 cm. long and <3.5 mm. wide, their margins *flat* or only very slightly recurved (low shrub of Murray Mallee sand-hills and Big Desert):

**B. opaca** F. Muell. in *Trans. phil. Soc. Vict.* 1: 16 (1855).

*Illust.*: Banks & Solander, *Ill. Bot. Cook's Voy.* 3: t. 285 (1905).

*Vern.*: Dark Turpentine Bush. *Distr.*: ABCFG—also S.A., N.S.W., Qd.

3. Ovary and capsule *glabrous*, often  $\pm$  *glaucous*, on pedicels 10-15 mm. long; leaves to 4" long, *acutish*, only *slightly paler* beneath:

**B. viscosa** (Labill.) Miq. in *Ann. Sci. nat. sér. 3 (Bot.)*, 1: 350, t. 15 (1844).

*Croton viscosum* Labill. *Nov. Holl. Plant. Specim.* 2: 72, t. 222 (1806).

*Illust.*: Labillardière (*l.c.*); Rossiter in Ewart, *Handb. For. Trees* t. 97 (1925); Hope in Bailey & Gordon, *Plant. poison. & injur. Stock* t. opp. 77 (1887).

*Vern.*: Pinkwood. *Distr.*: NVWZ—also ?W.A., Tas., N.S.W., Qd.

—Ovary and capsule densely *bristly-hirsute*, on pedicels usually <10 mm. long; leaves <2" long, *obtuse*, contrastingly *whitish* beneath:

**B. lasiocarpa** Muell.-Arg. in *Linnæa* 34: 59 (1865).

*Vern.*: Wallaby-bush. *Distr.*: W—also N.S.W.

#### AMPEREA Juss. (1824)

**A. xiphoclada** (Sieber ex Spreng.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manch.* 1916: 604 (1917).

*Leptomeria xiphoclada* Sieber ex Spreng. *Syst. Veg.* ed. 16, 4<sup>2</sup>: 109 (1827);

*A. spartioides* Brongn. in *Bot. Voy. La Coquille* 226, t. 49 (?1829).

*Illust.*: Brongniart (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 683 (1948); Pax in Engler, *Natürl. PflFam.* III 5: 2 fig. 1 b & 115 fig. 74 (1896), as *A. spartioides*.

*Vern.*: Broom Spurge. *Distr.*: CDEJKNPSTWZ—also S.A., Tas., N.S.W., Qd.

[*Eremocarpus setigerus* (Hook.) Benth. appeared at Picola in the Goulburn Valley, Mar. 1934, but does not seem to have spread or even persisted; it is recorded as naturalized at Glenelg, S.A. This strongly odorous, grey-tomentose annual is indigenous to California, where known as "Woolly-white Drought-weed". Similar in size and appearance to *Chrozophora* (Dyer's Litmus), *Eremocarpus* has female flowers without perianths, only 5-6 stamens in male flowers, a single style and 1-locular 1-seeded capsules.]

#### Family CELASTRACEÆ

##### CELASTRUS L. (1753)

**C. subspicatus** Hook. *Icon. Plant.* 5: t. 482 (1842).

*C. australis* Harvey & F. Muell. in *Trans. phil. Soc. Vict.* 1: 41 (1855).

*Illust.*: Hooker (*l.c.*); Rossiter in Ewart, *Handb. For. Trees* t. 99 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 28 (1886); Mueller, *Plants indig. Colon. Vict.* t. 21 (1864/5)—all except the first as *Celastrus australis*.

*Vern.*: Staff Climber. *Distr.*: W—also N.S.W., Qd.

[The common Holly of Europe, *Ilex aquifolium* L., is popular as a garden subject in cooler districts of Victoria. Seedlings occasionally appear outside gardens in the Macedon & Dandenong Ranges—one old specimen was noted on the Hanging Rock near Woodend, Nov. 1963—but this handsome tree can hardly be regarded as naturalized. It belongs to the closely related family *Aquifoliaceæ*, and is noteworthy for its lustrous, leathery, undulate leaves (2-3" long) with strong marginal spines, separate white male and female flowers in close axillary clusters, and scarlet berries (to 1 cm. diam.) with 3-4 hard stones.]

### Family STACKHOUSIACEÆ

#### STACKHOUSIA Sm. (1798)

1. Flowers *solitary* among the dense foliage, creamy, strongly scented at night-time, 5-7 mm. long; leaves narrow-oblong, obtuse, 5-8 mm. long (*prostrate* mat-forming alpine plant):

*S. pulvinaris* F. Muell. in *Trans. phil. Soc. Vict.* 1: 101 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 511, col. (1968); Mass, *Flowers aust. Alps* 23 (1967); Mueller, *Key Syst. Vict. Plants* 2: fig. 29 (1886); Mueller, *Plants indig. Colon. Vict.* t. 14 (1864/5); Pax in *Natürl. PflFam.* III 5: 232 fig. 133 A (1896).

*Vern.*: Alpine Stackhousia. *Distr.*: SV—also Tas., N.S.W.

—Flowers in leafless terminal *spikes or racemes* (*erect* plants) 2

2. Leaves mostly 1.5-3 cm. long, no more than 3 times as long as wide, *thick, very blunt*; flowers densely crowded, each subtended by a very broad bract; fruitlets  $\pm$  4 mm. long, *acutely 3-angled or winged* on the back (coastal dunes):

*S. spatulata* Sieber ex Spreng. *Syst. Veg.* ed. 16, 4<sup>2</sup>: 124 (1827).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 691 (1952); Pax in *Natürl. PflFam.* III 5: 232 fig. 133 K-M (1896).

*Vern.*: Coast Stackhousia. *Distr.*: EKPTW—also S.A., Tas., N.S.W., Qd,

—Leaves *several times* as long as wide (rarely quite leafless); fruitlets 2-3 mm. long, *rounded and strongly reticulate or muricate* on back 3

3. Spikes relatively *stout*, usually 1-3" long, flowers white, creamy, pinkish or yellow, *separate*, each subtended by an *acuminate bract* 2-3 mm. long and 2 bracteoles; calyx  $\pm$  3 mm. long; corolla-tube 5 mm. long or more, the lobes *blunt* and apically rounded (widespread in most districts):

*S. monogyna* Labill. *Nov. Holl. Plant. Specim.* 1: 77, t. 104 pro parte (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 23, col. (1968); Rosser, *Wildflowers Vict.* 57, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 93 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 690 (1952); Ewart, *Flor. Vict.* fig. 289 (1931); Burbidge, *Flor. Aust. Cap. Terr.* fig. 246 (1970); Garnet, *Wildflowers Wilson's Prom. t.*, n. 560 opp. 127 (1971).

*Vern.*: Creamy Stackhousia (Candles). *Distr.*: ABCDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[A frequent form in Mallee sand-hill country, also heaths around the Grampians, is almost leafless, many-stemmed and broom-like, but the flowers and fruits show no marked divergence from those of typical *S. monogyna*.]

—Spikes often very *slender*, short or long (to 7"); flowers *greenish-yellow*, in *clusters* of 2-3 (rarely single), each group subtended by *short, broad*, minute overlapping bracts <1 mm. long; calyx  $\pm$  1.5 mm. long; corolla-tube <5 mm. long, the narrow lobes often *acuminate* 4

4. Plant *leafy*; leaves linear to narrowly oblanceolate, 1-3 cm. long; inflorescence a compact terminal raceme (1-3" long), *dense at apex* and *not elongating*; corolla-tube 3-5 mm. long (Mornington Peninsula):

*S. flava* Hook. *Icon. Plant.* 3: t. 269 (1840).

*Illust.*: Hooker (l.c.).

*Vern.*: Yellow Stackhousia. *Distr.*: P—also ?S.A., Tas.

[In Ewart's *Flor. Vict.* 735 (1931) *S. flava* is said to be "confined to N.W. Victoria and uncommon". All the Mallee collections so labelled at Melbourne Herbarium are referable to a yellow-flowered form of *S. monogyna*. The only Victorian material approaching typical *S. flava* (of Woolnorth, far N.W. Tas.) is from Mt. Eliza near Frankston.]

—As for the last, but inflorescence elongated (2-8") and *very loose*, with *distant* groups of flowers (widespread plant):

*S. viminea* Sm. in Rees *Cyclopædia* 33: sub Stackhousia n. 1 (1816).

*Illust.*: Banks & Solander, *Ill. Bot. Cook's Voy.* 1: t. 39 (1900); Garnet, *Wild-flowers Wilson's Prom.* t., n. 562 opp. 78 (1971).

*Vern.*: Slender Stackhousia. *Distr.*: BCDEJPRSTVWZ—also W.A., S.A., Tas., N.S.W., Qd, Cent. Aust.

—Plant *leafless*, at least at flowering time, the foliage reduced to minute distant scales; branches wiry; flowers few and distant, the corolla-tube 2-3 mm. long (far E. Gippsland):

*S. intermedia* F. M. Bailey in *Qd agric. J.* 3: 281 (1898).

*Illust.*: White in Bailey, *Compr. Cat. Qd Plants* fig. 81 (1913).

*Vern.*: Wiry Stackhousia. *Distr.*: Z (Cape Conran to 6 miles N.E. of Genoa)—also N.S.W., Qd., N.G.

[The first Victorian collection of *S. intermedia* (Maramingo Ck, Jan. 1947) at Melbourne Herbarium matches the type from Lizard Id (far N. Qd) very well. This taxon ranges widely through New Guinea and Indonesia to the Philippines—see *Flora Malesiana* 4<sup>1</sup>: 35-36 (1948). It is doubtless conspecific with the Port Jackson plant referred, in Beadle, Evans and Carolin's *Handb. vasc. Plants Sydney District* 30 4(1962), to *S. scoparia* Benth. *Flor. aust.* 1:409 (1863)—a Western Australian species distinguished by its much coarser, rigidly erect, broom-like habit and *lacinate edges* to the bracts and sepals. Except for the obtuse corolla-lobes ascribed to *S. muricata* Lindl. (type from Port Jackson), and the presence of

leaves, this species also is very close to *S. intermedia*. Revisional studies may eventually show *S. viminea* Sm. to be highly variable, embracing *S. flava*, *S. muricata* and *S. intermedia* as extreme forms. The characters purporting to separate them are indeed rather trivial and by no means always apparent.]

### Family \*MELIANTHACEÆ

#### \*MELIANTHUS L. (1753)

\**M. comosus* Vahl *Symb. Bot.* 3: 86 (1794).

*Illust.*: Marloth, *Flor. S. Africa* 2<sup>a</sup>: t. 54 fig. B, col. (1925); Black, *Naturalized Flor. S. Aust.* 43 (1909); Engler & Drude, *Veg. Erde* 9<sup>a</sup>: 541 (1910).

*Vern.*: Kruidje-roer-my-nie (Afrikaans, in allusion to unpleasant odour).

*Distr.*: HMX—also S.A. Highly poisonous to stock.

[South African *Melanthus major* L. (Cape Honey-flower) was formerly much planted in large gardens and, although sometimes persisting about old estates, it does not seem to be anywhere naturalized. This soft shrub, to 10 ft. tall, has large pinnate greyish *glabrous* leaves (1 ft. long or more) with *broad united stipules*, dark red-brown flowers and *glabrous* papery capsules 1-1½" long.]

### Family SAPINDACEÆ

1. Leaves *pinnate* with leaflets >2" long; fruit *indehiscent*, with 2 or 3 globular lobes (very rare tree of far E. Gippsland)

*Alectryon* (p. 356)

Leaves simple or pinnate with leaflets <1" long 2

2. Fruit with 1-4 *globular lobes*; ovules 1 per loculus; flowers *bisexual* (small grey-green Mallee tree with simple leaves 2-5" long)

*Heterodendrum* (p. 356)

Fruit with *sharp angles or reddish winged outgrowths*; ovules 2 per loculus; flowers mostly *unisexual* (widespread viscid shrubs)

*Dodonæa* (p. 357)

#### ALECTRYON Gärtn. (1788)

*A. subcinereus* (A. Gray) Radlk. *Sapind. Holl.-Ind.* 47 (1877-78).

*Cupania subcinerea* A. Gray in *U.S. explor. Exped.* 15 (Bot. 1): 258 (1854).

*Illust.*: Rossiter in Ewart, *Handb. For. Trees* t. 100 (1925), as *Nephelium leiocarpum*.

*Vern.*: Smooth Ramboutan. *Distr.*: Z (near Genoa Gorge)—also N.S.W.

#### HETERODENDRUM Desf. (1818)

*H. oleifolium* Desf. in *Mém. Mus. Hist. nat., Paris* 4: 8, t. 3 (1818).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 693 B-D & 695 (1952); Rossiter in Ewart *Handb. For. Trees* t. 101 (1925); Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2<sup>a</sup>: 21 t. 20 (1960); Maiden, *For. Flor. N.S.W.* 2: t. 52 (1904).

*Vern.*: Cattle-bush. *Distr.*: AB—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

*DODONÆA* L. (1771)

1. Foliage mostly *pinnate*; flowers *solitary* in axils; capsule usually 4-winged 9
- Foliage of *simple* leaves; flowers commonly *paniculate* 2
2. Leaves small (<3 cm. long) or narrow (<1 cm. wide), sometimes toothed or lobed 4
- Leaves *large* (i.e. 5-10 cm. long and 1-4 cm. wide), quite *entire* 3
3. Leaves light *green*, *thin-textured*; fruit usually 3-locular, *fragile*, the wings much *longer than wide* (tall shrub of far E. Gippsland):

*D. triquetra* J. Wendl. *Bot. Beobacht.* 44 (1798).

*Illust.*: Sulman, *Some Familiar Wild Flowers* t. 40 [1913].

*Vern.*: Large-leaf Hop-bush. *Distr.*: WZ—also N.S.W., Qd.

—Leaves *greyish*, *thick*; fruit usually 4-locular, *hard* and leathery, the wings about *as long as wide* (scattered and uncommon in farther E. highlands and Pine Mtn.):

*D. rhombifolia* N. A. Wakefield in *Vict. Nat.* 72: 22, 23 fig. 1 (1955).

*Illust.*: Wakefield (*l.c.*).

*Vern.*: Broad-leaf Hop-bush. *Distr.*: VW—also N.S.W.

4. Wings of the usually 4-locular capsule *several times* as wide as long; leaves linear-oblongate (to 10 cm. long), *entire* or somewhat *sinuate*, usually *greyish* beneath; anthers short (<2 mm. long), with densely *penicillate apices* (very rare shrub of Mt. Zero, northern Grampians, but doubtfully from far E.):

*D. truncatiales* F. Muell. *Fragm. Phyt. Aust.* 2: 143 (1861).

*Illust.*: Wakefield, *Vict. Nat.* 72: 23 fig. 2 (1955).

*Vern.*: Angular Hop-bush. *Distr.*: CV—also N.S.W., Qd.

—Wings of 3-locular capsule *not* wider than long, sometimes absent; anthers *never* bearded 5

5. Capsule *not* or hardly winged, but acutely 3-angled, 6-8 mm. long and wide; leaves *obovate*, *entire*, 8-20 mm. long (usually <15 mm.); flowers 1-3 in axils, sepals narrow; style  $\pm$  6 mm. long (small glabrous shrub of sandy terrain in Mallee):

*D. bursariifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 8 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 693 L-M (capsule only) & 696 (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 12 no. 234 (1965); Becker in Ewart, *Plants indig. Vict.* t. 5 opp. 5 (1910); Mueller, *Key Syst. Vict. Plants* 2: fig. 26 (1886).

*Vern.*: Small Hop-bush. *Distr.*: ABCDFG—also W.A., S.A., N.S.W.



—Capsule with conspicuous, rather *broad wings*

6

6. Plant *diffuse or prostrate*; leaves cuneate, 1-2 cm. long, either entire or with 3-5 acute teeth; flowers *solitary*; capsule with *thickish* rigid wings; sepals lanceolate; style 1-2 cm. long (chiefly Grampians, but also upper Goulburn R. and Sale districts):

*D. procumbens* F. Muell. in *Trans. phil. Soc. Vict.* 1: 8 (1855).

*Vern.*: Trailing Hop-bush. *Distr.*: DJSX—also N.S.W.

—Plant  $\pm$  *erect*; flowers in *panicles or clusters*; capsule with rather *fragile, thin* wings; style *very short*

7

7. Leaves mostly 1-3 cm. long, 5-10 mm. wide, narrowly to broadly *cuneate*, usually with  $\pm$  *truncate apex* and 3-5 distinct *apical teeth*, often  $\pm$  toothed irregularly along upper margins as well; male inflorescence a *congested terminal panicle* of few flowers (sometimes only 2-5):

*D. cuneata* Sm. in Rees *Cyclopædia* 12: sub *Dodonæa* n. 5 (1809).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 200, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 693 E-K (1952), as *D. viscosa*; Rudge, *Trans. Linn. Soc., Lond.* 11: t. 19 (1815).

*Vern.*: Wedge-leaf Hop-bush. *Distr.*: BCDGHJKMNRSTVWXZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

[The var. *rigida* Benth. *Flor. aust.* 1: 477 (1863), in obs. (Grampians) has more rigid foliage and larger, harder, very resinous fruits with wings 12-15 mm. long. An obese form, with leaves to 7 cm. long, occurs on Mt. Arapiles, N.W. of Grampians.]

—Leaves 3-8 cm. long, *not truncate*; male panicles *loose*, few- to many-flowered

8

8. Leaves *linear to narrowly oblanceolate*, only 2-4 mm. wide, the margins often *sinuate* or even obscurely toothed, the surfaces usually *punctate* with conspicuous resin-glands; anthers 1.5-2 mm. long:

*D. angustissima* DC. in *Mém. Soc. Phys. & Hist. nat. Genève* 1<sup>2</sup>: 448 (1822).

*D. attenuata* A. Cunn. in *Field Geogr. Mem. N.S.W.* 353 (1825).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 12 n. 233 (1955); Turner, *Forage Plants Aust.* (Dep. Agric. N.S.W.) 19 (1891); *Curtis's bot. Mag.* 55: t. 2860, col. (1828)—all as *D. attenuata*.

*Vern.*: Slender Hop-bush. *Distr.*: ABCEFGMNRSVWZ—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[A form from the farther E. highlands, with leaves only 1-2 mm. wide has been distinguished as *D. attenuata* var. *linearis* Benth. *Flor. aust.* 1: 477 (1863), but such a segregate would be redundant if recognized within the general circumscription of *D. angustissima*.]

—Leaves *oblong-lanceolate to oblanceolate*, 5-10 mm. wide or more, the margins virtually *entire* and resin-glands *inconspicuous*; anthers 2-2.5 mm. long:

*D. viscosa* (L.) N. J. Jacq. *Enum. Plant. Ins. Carib.* 19 (1760).

*Ptelea viscosa* L. *Spec. Plant.* 1: 118 (1753).

*Illust.*: Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: tt. 123-125, col. (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 247 (1971).

*Vern.*: Akeake (Maori). *Distr.*: CHWXZ—also ?S.A., N.S.W., A.C.T., N.Z.

[The typical form of *D. viscosa* is a tall pantropical plant with large, prominently veined leaves (2-4 cm. wide) and capsules exceeding 2 cm. in length. Victorian populations, though variable, are probably best referred to the narrower-leaved, smaller-fruited variety *angustifolia* (Swartz, *ut sp.*) Benth. *Flor. aust.* 1: 476 (1863). *D. viscosa*, *D. cuneata* and *D. angustissima* are co-extensive in many parts of Victoria and appear to intergrade, so that the distinctions between any pair of them may often be hazy. Floral and fruiting characters are very similar in all three, and leaf-form is the principal criterion for delimitation.]

9. Leaflets several, usually *hairy*, 4-8 mm. long, *obovate-cuneate*, the apex usually 3-dentate, often conspicuously gland-dotted; style  $\pm$  8 mm. long (scattered on W. highlands, also granite hills of N.E.):

*D. boroniifolia* G. Don *Gen. Syst.* 1: 674 (1831).

*Vern.*: Hairy Hop-bush. *Distr.*: DHRSVZ—also ?W.A., N.S.W.

—Leaflets few, *glabrous*, 6-15 mm. long, *linear-terete*, channelled above, sometimes absent from a few leaves; style 3-4 mm. long (rare shrub of N.W. Mallee):

*D. stenozyga* F. Muell. *Fragm. Phyt. Aust.* 1: 98 (1859).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 699 (1952).

*Vern.*: Desert Hop-bush. *Distr.*: ABG—also W.A., S.A., N.S.W.

[In Ewart's *Flor. Vict.* 739 & 740 (1931) the two Mallee species, *D. baueri* Endl. *Enum. Plant. Hueg.* 13 (1837) and *D. humilis* Endl. *Atakta Bot.* t. 31 (1833), are admitted with the comment "'on the Murray' and very rare, if Victorian". Although both taxa are rather widespread in South Australia, collections from Victoria are as yet unknown in any Herbarium and the records for this State should be dropped. *D. baueri* is rather similar to *D. bursariifolia* (q.v.), but has solitary flowers with broader sepals and smaller *septifragal* capsules; *D. humilis* (endemic in S.A.) has pinnate foliage with obovate leaflets, and subglobular capsules lacking wings. *D. lobulata* F. Muell. in *Linnaea* 25: 372 (1853) has been noted near Wentworth (N.S.W.) and may possibly extend across the Murray; it is a rather tall shrub with *pinnatifid* leaves to 4 cm. long, 3-winged capsules and shining seeds.]

### Family \*ANACARDIACEÆ

#### \*SCHINUS L. (1753)

\**S. molle* L. *Spec. Plant.* 1: 388 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 701 (1952); Curtis's *bot. Mag.* 61: t. 3339, col. (1834); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: 216 (1924); Bailey, *Standard Cycl.*

*Hort.* 3: fig. 3567 & 3568 (1935).

*Vern.*: Pepper-tree. *Distr.*: ANP—also S.A., N.S.W.

## Family \*ACERACEÆ

## \*ACER L. (1753)

\**A. pseudo-platanus* L. *Spec. Plant.* 2: 1054 (1753).

*Illust.*: Butcher, *New Ill. Brit. Flor.* 1: 552 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5: t. 180 fig. 1, col. (1924); Everard, *Wild Flowers World*, t. 19 fig. A, col. (1970).

*Vern.*: Sycamore Maple. *Distr.*: Sporadic.

## Family RHAMNACEÆ

1. Leaves *opposite*, often lacking from older branchlets (also *opposite*, rigid, stout, green, *spine-tipped*); flowers white in axillary clusters (rare shrub, 2-8 ft., basal areas of W., far E. & N.E.) *Discaria* (p. 372)  
Leaves *alternate*; branches *not* spiny or, if ever finely so, then *alternate* 2
2. Ovary *superior*; sepals *deciduous* (*glabrous*, broad-leaved, introduced shrub of sandy coastal tracts; drupes black) \**Rhamnus* (p. 360)  
Ovary partly or quite *inferior*; sepals *persistent* until well after anthesis ( $\pm$  *hairy* shrubs) 3
3. Staminal filaments *longer than* petals which are *sometimes absent*; anthers *oblong*,  $>0.5$  mm. long (and mostly  $\pm 1$  mm.); floral tube and disk completely *adnate to ovary*; floral bracts soon *deciduous* *Pomaderris* (p. 361)  
Staminal filaments *shorter than* petals which are *always present* and *hood-shaped*; anthers minute ( $<0.3$  mm. long), usually  $\pm$  *rotund* 4
4. Flowers pedicellate in diminutive, *loose panicles*, the floral bracts *deciduous* early and floral tube quite *adnate to ovary*; petals separating from and *not enclosing* or concealing the anthers (slender shrubs endemic in Grampians) *Trymalium* (p. 368)  
Flowers in heads or dense clusters with *persistent* floral bracts or separate on short leafy spikes; petals *enclosing* the anthers 5
5. Flowers *sessile in heads* that may be surrounded by *specialized and often whitish* floral leaves; floral tube or receptacle *not* (or hardly) extending above the ovary *Spyridium* (p. 369)  
Flowers distinct on spikes, or crowded into small heads *without* specialized floral leaves; floral tube cylindrical or campanulate, manifestly *prolonged* above the ovary (leaves usually very small, narrow and ericoid) *Cryptandra* (p. 371)

## \*RHAMNUS L. (1753)

\**R. alaternus* L. *Spec. Plant.* 1: 193 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 703 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 5: fig. 1888 a (1924); Coste, *Flor. Franc.* 1: fig. 720 (1901).

*Vern.*: Italian Buckthorn. *Distr.*: EP—also S.A., N.S.W., Qd.

## POMADERRIS Labill. (1805)

1. Upper-surfaces of leaves  $\pm$  *pubescent* or with matted *velvety indumentum* 17

Upper-surfaces of leaves quite *glabrous* (except, rarely, on the midrib)

2a

- 2a. Leaves *cuneate*, *prominently 2-lobed* (with central included mucro), 8-15 mm. long; flowers in small terminal corymbs, apetalous, yellow; vestiture very fine and hoary on under-side of foliage, with appressed simple silky hairs on ovary and calyx (extremely rare shrub, to 3 ft., at W. extremity of Little Desert; perhaps extinct at Grampians & Lower Glenelg R.):

*P. obcordata* Fenzl in Endl. et al. *Enum. Plant. Hueg.* 23 (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 704 (1952); Mueller, *Key Syst. Vict. Plants* 2: fig. 61 (1886).

*Vern.*: Wedge-leaf Pomaderris. *Distr.*: CD(?)—also W.A., S.A.

—Leaves neither *cuneate* nor 2-lobed (either linear, elliptic, ovate or rotund) 2b

- 2b. Vestiture on under-surfaces of leaves and on calyx-tube predominantly of *simple hairs*; ovary quite *inferior*, bearing a tuft of *long simple hairs* around the style-base 7

Vestiture on under-surfaces of leaves (and often on calyx also) predominantly *stellate*, either very fine and hoary or dense, coarse and  $\pm$  scurfy 3

3. Petals *absent*; vestiture *coarsely stellate*, often scurfy and/or ferruginous (widely ranging shrubs) 5

Petals *present*; vestiture a very *fine white mat* of stellate hairs (shrubs of mountains and stream-banks E. of Melbourne) 4

4. Leaves to  $8 \times 3.5$  cm. (always  $>2$  cm. long), usually *acute*; panicles *yellow*, large (3-5 cm. wide), leafless; petals manifestly *auriculate*; ovary with *scattered coarse stellate hairs*; capsule *semi-immersed*:

*P. multiflora* Sieber ex Fenzl et al. *Enum. Plant. Hueg.* 21 (1837).

*P. elliptica* sens. Ewart *Flor. Vict.* 745 (1931) pro parte, non strict. Labill. (1805).

*Illust.*: Kerr in Ewart, *Handb. For. Trees* t. 103 (1925), as *P. elliptica*; Garnet, *Wild-flowers Wilson's Prom.* fig. 564 (1971).

*Vern.*: Pomaderris. *Distr.*: STWZ—also N.S.W., Qd.

—Leaves mostly  $1.5 \times 1$  cm. (exceptionally to  $4 \times 2$  cm.), quite *blunt* or even  $\pm$  *emarginate*; panicles *whitish*, small, leafy; petals *never auriculate*,  $\pm$  *deltoid-spadiciform*; ovary prominent, *closely beset* with very *minute stellate hairs*; capsule much *exserted*:

*P. vacciniifolia* Reiss. in *Linnaea* 29: 266 (1858).

*Illust.*: *Gdnrs' Chron.* ser. 3, 35: 339 fig. 147 (1904).

*Vern.*: Pomaderris. *Distr.*: NPSTV—also N.S.W.

5. Calyx with *simple hairs*, its lobes finally *deciduous*; inflorescence short but relatively *loose, non-bracteate*; ovary *inferior*, flat, villous; capsule *enclosed*; leaves often  $>3$  cm. long:

*P. prunifolia* A. Cunn. ex Fenzl [See p. 366.]

—As for the last, but leaves  $<3$  cm. long and flowers *sessile* in dense, *bracteate, head-like clusters*:

*P. betulina* A. Cunn. [See p. 364.]

—Calyx with *stellate hairs only*

6. Leaves *large* (to  $15 \times 6$  cm. and always  $>2$  cm. broad); calyx-lobes *persisting* until the *half-exserted* fruit matures (widespread gully tree with large elongated flowering panicles):

*P. aspera* Sieber ex DC. [See p. 367.]

—Leaves *small* (rarely 3 cm. long, always  $<2$  cm. broad); calyx-lobes *persisting*; ovary *not* pointed; capsule *enclosed* (limestone tracts, chiefly coastal):

*P. oraria* F. Muell. ex Reiss. [See p. 366.]

—As for the last, but calyx-lobes *deciduous*, the prominent ovary *pointed* and capsule *exserted* (tall widespread W. & N.E. shrub, with leaves usually  $1.1\text{--}1.5$  cm. long):

*P. racemosa* Hook. [See p. 366.]

7. Leaves broadly ovate-elliptic (to  $3 \times 2$  cm.), bluntish, their under-surfaces *strongly penni-costate* and bearing a short, dense, whitish vestiture; flowers *white*, in dense pyramidal panicles; petals *absent* (rare, in far E. Gippsland):

*P. costata* N. A. Wakefield in *Vict. Nat.* 68: 141 (1951).

*Vern.*: Pomaderris. *Distr.*: Z (Brodrigg R. etc.)—also N.S.W. (v. rare).

—Leaves *not* combining the above characters; petals often present

8. Petals *auriculate*; style very *little cleft*; leaves to  $8 \times 3$  cm., ovate-elliptic, their under-surfaces bearing short curved hairs on the lamina and some *large stellate hairs* on the mid-veins and petioles; flowers yellow, in large corymbose panicles (Gippsland, east from Baw Baws):

*P. sieberana* N. A. Wakefield in *Vict. Nat.* 68: 140 (1951).

*P. elliptica* sens. Ewart *Flor. Vict.* 745 (1931) pro parte, *non* Labill. (1805).

*Vern.*: Pomaderris. *Distr.*: STWZ—also N.S.W.

—Petals *not* auriculate (sometimes absent); style *deeply cleft*, with spreading arms; under-surfaces of leaves *without* any stellate hairs on mid-veins and petioles [except in maximum development of *P. andromedifolia*]

9. Leaves usually  $<2.5$  cm. long [sometimes to 4 cm. in *P. andromedifolia*], the venation *not* noticeably reticulate; vestiture on under-surfaces

*forwardly appressed*; inflorescence small, with *close clusters* of pedicellate flowers; style cleft to middle or almost to base 15

Leaves usually >2.5 cm. long, prominently *reticulate-veined*; vestiture *not* appressed; inflorescence large or very loose 10

10. Under-surfaces of leaves (including nerves), petioles and calyx-tubes all *densely villose* 12

Under-surfaces of leaves *not* villose on the lamina, but long hairs *sparsely developed* on the nerves, petioles and calyces 11

11. Leaves usually *blunt*, their margins *hardly recurved*, the mid-vein bearing *minute hairs* along its upper surface; flowers *golden*; petals usually *present*, broad (E. highlands, mostly near streams):

*P. pilifera* N. A. Wakefield in *Vict. Nat.* 68: 140 (1951).

*P. elliptica* sens. Ewart *Flor. Vict.* 745 (1931) pro parte, *non* Labill. (1805).

*Vern.*: Pomaderris. *Distr.*: SW—also Tas, N.S.W.

—Leaves usually *tapered* at both ends, their margins *distinctly recurved* and mid-vein quite *glabrous* above; flowers *pale* yellowish; petals often *absent* (far E. Gippsland):

*P. discolor* (Vent.) Poir. in *Encycl. méth. (Bot.)* 8: 591 (1808).

*Ceanothus discolor* Vent. *Jard. Malm.* 1: t. 58 (1804);

*P. elliptica* sens. Ewart *Flor. Vict.* 745 (1931) pro parte, *non* Labill. (1805).

*Illust.*: Ventenat (*l.c.*).

*Vern.*: Pomaderris. *Distr.*: WZ—also N.S.W.

12. Upper branches and peduncles *slender*, with very *long spreading hairs*; flowers very *small, pale, apetalous*, forming sparse irregularly elongated panicles (far E. Gippsland):

*P. ligustrina* Sieber ex DC. *Prodr.* 2: 34 (1825).

*Vern.*: Pomaderris. *Distr.*: WZ—also N.S.W., Qd.

—Upper branches and peduncles *stout*, with a *short dense* and woolly vestiture 13

13. Flowers *golden*, normally in compound *corymbose panicles* with long bare lower branches; petals broad; style cleft < half-way to base; mid-vein of leaves *minutely pubescent* on upper surface (far E. Gippsland):

*P. affinis* N. A. Wakefield in *Vict. Nat.* 68: 140 (1951).

*Vern.*: Pomaderris. *Distr.*: WZ—also N.S.W., A.C.T.

—Flowers in *pyramidal* or rounded panicles; style cleft *almost to the base*; mid-vein *glabrous* on the upper surface 14

14. Flowers usually *pale*, in large panicles (3-6 cm. wide); petals *entire*, rather *narrow*, sometimes *absent*; vestiture of upper branches, under-surfaces of leaves etc. *extremely fine* and woolly (Cent. & E. Vic., usually along streams):

*P. ferruginea* Sieber (ut "*ferruginosa*") ex Fenzl in Endl. et al. *Enum. Plant. Hueg.* 21 (1837).

*Vern.*: Pomaderris. *Distr.*: NSTWZ—also N.S.W., Qd.

—Flowers *golden*, in rather small panicles (up to 3 cm. wide); petals present, *crenulate, broad*; vestiture rather coarse, often somewhat stellate on upper branches and petioles:

*P. andromedifolia* A. Cunn. [See below]

15. Flowers *apetalous*, pale; leaves invested beneath with *shining, almost golden silky hairs* (very rare, in extreme E. Gippsland):

*P. sericea* N. A. Wakefield in *Vict. Nat.* 68: 140 (1951).

*Vern.*: Pomaderris. *Distr.*: Z (Upper Genoa R.)—also N.S.W. (v. rare).

—Flowers *with petals*

16. Leaves to  $10 \times 3$  mm., *narrow*, quite *flat*, with *not* lateral veins; vestiture on the under-surfaces short, white and very *closely appressed* (very rare, in far E. Gippsland):

*P. ledifolia* A. Cunn. in *Field Geogr. Mem. N.S.W.* 351 (1825).

*Vern.*: Pomaderris. *Distr.*: VZ—also N.S.W.

—Leaves mostly  $> 10$  mm. long, the lateral veins *prominent* and vestiture rather *loose*, or, if smaller, then *broadish* and conspicuously convex; flowers *golden* (far E. Gippsland, mostly near streams):

*P. andromedifolia* A. Cunn. in *Field Geogr. Mem. N.S.W.* 351 (1825).

*P. phylliræoides* Sieber ex DC. *Prodr.* 2: 33 (1825).

*Illust.*: Willis, *Vict. Nat.* 58: 176 fig. 1 (1942), as *P. phillyreoides*; Hooker in *Curtis's bot. Mag.* 60: t. 3219, col. (1832); Suessenguth, *Natürl. PflFam.* ed. 2, 20d: fig. 7 B on 29 (1953), as *P. phillyreoides*.

*Vern.*: Pomaderris. *Distr.*: VWZ—also N.S.W., A.C.T., Qd.

17. Vestiture on under-surfaces of leaves and on calyx-tube predominantly of *simple hairs*; ovary quite *inferior*, bearing a tuft of long simple hairs around the style-base

Vestiture on under-surfaces of leaves (and often on calyx also) predominantly *stellate*, either fine and hoary or coarse and  $\pm$  scurfy (sometimes obscured by the revolute margins of narrow leaves); petals always *absent*

18. Flowers almost or quite *sessile*, in *bracteate head-like clusters* on a leafy inflorescence; calyx and ovary densely villous; leaves  $1.2-5$  cm.  $\times$   $7-12$  mm., elliptical, deeply sulcate,  $\pm$  hispid above with simple hairs, stellate-scurfy and  $\pm$  ferruginous beneath (scattered in foothills of N.E. and farther E.):

*P. betulina* A. Cunn. in *Curtis's bot. Mag.* 60: t. 3212, col. (1833).

*Illust.*: Hooker in *Cunningham (l.c.)*.

*Vern.*: Pomaderris. *Distr.*: RVWZ—also N.S.W., A.C.T.

- Flowers *pedicellate*, in *loose panicles* 19
19. Either the leaves  $>5$  cm. long or the flowers with pubescent ovaries 21  
 Leaves usually  $10-15 \times 2-4$  mm. (rarely to 2.5 cm. long); flowers in small leafy thyrsoid panicles; ovary *prominent, glabrous*; capsule *glabrous* and quite *exserted* (N.E. and E. only) 20
20. Leaves normally *narrow-linear*, the margins *much recurved*; upper-surfaces hispid with *stellate* hairs; under-surfaces covered with a whitish mat of stellate hairs (sometimes a few long dark ones on the mid-vein):

*P. angustifolia* N. A. Wakefield in *Vict. Nat.* 68: 141 (1951).

*Vern.*: Pomaderris. *Distr.*: NRSVWZ—also N.S.W., A.C.T.

[A form with relatively broader, almost flat leaves occurs at Suggan Buggan.]

—Leaves *elliptical to oblanceolate*, almost *flat*; upper-surfaces  $\pm$  hispid with *simple* hairs; under-surfaces bearing a very close tomentum, the veins and petioles beset with *long silky hairs*:

*P. helianthemifolia* (Reiss.) N. A. Wakefield in *Vict. Nat.* 68: 141 (1951).

*Trymalium helianthemifolium* Reiss. in *Linnaea* 29: 271 (1858);

*P. ledifolia* sens. Ewart *Flor. Vict.* 746 (1931), non A. Cunn. (1825).

*Vern.*: Pomaderris. *Distr.*: RSWZ—also N.S.W.

21. Leaves *narrow-linear* (to 2 cm.  $\times$  2-3 mm.), the margins *much recurved* and often *revolute* so as to conceal the under-surface; flowers in very *small but numerous* terminal leafy panicles (subalps of N.E. and far E.):

*P. phyllicifolia* Lodd. *Bot. Cab.* 2: t. 120 (1818).

*Illust.*: Poole & Adams, *Trees & Shrubs N.Z.* 129 (1963); Laing & Blackwell, *Plants N.Z.* ed. 6: 251 (1957); Loddiges, *Bot. Cabinet* 2: t. 120 (1818).

*Vern.*: Pomaderris. *Distr.*: VWZ—also Tas., N.S.W., A.C.T., N.Z.

[The often co-extensive var. *ericoides* Maiden & Betche in *Proc. Linn. Soc. N.S.W.* 29: 737 (1904) differs in its very narrow ( $\pm$  1 mm. wide), almost terete, heath-like leaves, but the flowers are indistinguishable from those of var. *phyllicifolia*. It was published as a distinct species, *P. ericifolia*, by Hooker in his *J. Bot., Lond.* 1: 257 (1834).]

- Leaves *broad*, the margins *not* or *hardly-recurved* 22
22. Leaves *very large* (to  $15 \times 6$  cm.), always  $>2$  cm. wide, coarsely toothed and usually  $\pm$  *rugulose*; flowers very numerous, in large elongated panicles 3-6" long (tall shrubs or trees of mountain slopes and gullies) 27  
 Leaves small to medium, rarely  $>4$  cm. long and always  $<2$  cm. wide 23
23. Leaves mostly  $<1$  cm. long (usually only 4-6 mm.), *oval or rotund*, flat, blunt; upper-surfaces hispid with simple hairs; under-surfaces with a *matted whitish tomentum* and a sprinkling of larger dark stellate hairs; flowers minute (sepals and ovary each  $\pm$  1 mm. long) in very small few-flowered cymes (scattered through E. & W. highlands):



*P. elachophylla* F. Muell. *Fragm. Phyt. Aust.* 2: 131 (1861).

*Vern.*: Lacy Pomaderris. *Distr.*: DEJKNSTVWZ—also Tas.

—Leaves 1-4 cm. long; sepals and ovary each 1-2 mm. long 24

24. Calyx-tube with *simple hairs*, the lobes finally deciduous; ovary quite inferior villous; leaves often >3 cm. long 26

Calyx-tube hoary, with *stellate hairs only*; leaves rarely attaining 3 cm. 25

25. Upper-surfaces of leaves sprinkled with fine *stellate hairs*, the under-surfaces *greenish*; calyx-lobes *deciduous*; ovary prominent, *pointed*; capsule *exserted* (riparian shrub of W. and N.E.):

*P. racemosa* Hook. *J. Bot., Lond.* 1: 256 (1834-35).

*P. subrepanda* F. Muell. ex Reiss. in *Linnaea* 29: 267 (1858).

*Illust.*: Kerr in Ewart, *Handb. For. Trees* t. 105 (1925), as *P. subrepanda*.

*Vern.*: Pomaderris. *Distr.*: DEHJMNPRT—also Tas.

—Upper-surfaces of leaves hispid with simple or stellate hairs, and usually with a prominent thin *white margin*, the under-surfaces *creamy* or  $\pm$  ferruginous; calyx-lobes *persisting* until the *enclosed* capsule matures; ovary *not* pointed (limestone formations of coast and river cliffs):

*P. oraria* F. Muell. ex Reiss. in *Linnaea* 29: 268 (1858).

*P. racemosa* sens. Ewart *Flor. Vict.* 748 (1931), atque Benth. *Flor. aust.* 1: 421 (1863), non Hook. (1834-35).

*Illust.*: Poole & Adams, *Trees & Shrubs N.Z.* 129 (1963); Lee, *Wild Life (Melb.)* 9: 326 (1947), as *P. racemosa*; Garnet, *Wildflowers Wilson's Prom.* fig. 565 (1971).

*Vern.*: Coast Pomaderris. *Distr.*: CEKPTW—also W.A., S.A., Tas., N.S.W.

[A variant (or perhaps related, but undescribed species) occurs on rhyolitic rocks of the Snowy R. gorge, east of W. Tree and Gelantipy; it differs in the constantly narrow-elliptic leaves, to 5 cm. long with a finer stellate indumentum beneath.]

26. Leaves broadly *acute*, their very wrinkled upper-surfaces hispid with a *simple pubescence* and under-surfaces covered with a thick  $\pm$  *ferruginous stellate scurf* (scattered in central and eastern hilly areas):

*P. prunifolia* A. Cunn. ex Fenzl in Endl. et al. *Enum. Plant. Hueg.* 22 (1837).

*Vern.*: Pomaderris. *Distr.*: DJNRSWZ—also N.S.W., Qd.

—Leaves very *blunt*, sometimes emarginate, their upper-surfaces bearing *stellate pubescence* and under surfaces a fine *white mat of loose stellate hairs* (very rare shrub of extreme E. Gippsland):

*P. cotoneaster* N. A. Wakefield in *Vict. Nat.* 68: 142 (1951).

*Vern.*: Pomaderris. *Distr.*: Z (Upper Genoa R.)—also N.S.W.

27. Lamina of leaf *greenish* and *plainly visible* through the *loose* indumentum of stalked stellate hairs on under-surface, longer scattered ferruginous hairs being sometimes present also (abundant through mountains of S. and E.):

*P. aspera* Sieber ex DC. *Prodr.* 2: 33 (1825).

*P. apetala* sens. Ewart *Flor. Vict.* (1931) pro parte major., *non* Labill. (1805).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 442, col. (1968); Ewart, *Handb. For. Trees* t. 104 (1925), presumably as *P. apetala* (voucher material almost certainly from near Melbourne).

*Vern.*: Hazel Pomaderris *Distr.*: EHJKNPRSTVWZ—also ?S.A., N.S.W., A.C.T.

—Lamina of leaf *completely obscured* on the under-surface by a *dense scurf* of *whitish*, *sessile* stellate hairs (Grampians only):

*P. apetala* Labill. *Nov. Holl. Plant. Specim.* 1: 62, t. 87 (1805).

*Illust.*: Labillardière (*l.c.*); Poole & Adams, *Trees & Shrubs N.Z.* 129 (1963); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 570, col. (1967).

*Vern.*: Tainui—Maori name (Dogwood—Tas.). *Distr.*: DJ—also Tas., N.Z.

28. Inflorescence a *loose panicle of pedicellate flowers*, with *deciduous* bracts 30

Inflorescence a *head of almost sessile flowers*, with *persistent* bracts; leaves *broad* (oval to rotund), deeply penni-sulcate on the upper surfaces, densely villous beneath; petals usually absent; style slender, cleft half-way to base 29

29. Flower-heads *compact*, globular; upper-surfaces of leaves *hispid* with *stout erect hairs* (E. & N.E. foothills):

*P. eriocephala* N. A. Wakefield in *Vict. Nat.* 68: 142 (1951).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 248 (1970).

*Vern.*: Pomaderris. *Distr.*: VWZ—also N.S.W., A.C.T.

—Flower-heads relatively *loose*; upper-surfaces of leaves *velvety*, with a *fine dense indumentum* (E. & N.E. foothills):

*P. subcapitata* N. A. Wakefield in *Vict. Nat.* 68: 142 (1951).

*Vern.*: Pomaderris. *Distr.*: VWZ—also N.S.W., A.C.T.

30. Flowers *pale, apetalous*, in small elongated leafy panicles; leaves narrow, with *recurved* margins, mostly <2 cm. long 33

Flowers *golden-yellow*, with *petals*; leaves *broad and flat* 31

31. Leaves broadly *ovoid, blunt*, <4 cm. long, their upper-surfaces *velvety* with dense *minute hairs*, the under-surfaces *whitish* and bearing (as well as the petioles and upper branches) very *long hairs* which are confined to veins (foothills to subalps of N.E. & far E.):

*P. velutina* J. H. Willis in *Vict. Nat.* 58: 177, 176 fig. 2 (1942).

*P. cinerea* sens. Ewart *Flor. Vict.* 747 (1931), *non* Benth. (1863).

*Illust.*: Willis (*l.c.*).

*Vern.*: Velvet Pomaderris. *Distr.*: RSVW—also N.S.W.

—Leaves *ovate-elliptic*,  $\pm$  *pointed*, >5 cm. long, their upper-surfaces *hispid* with *macroscopic hairs*, the under-surfaces *yellowish* or dusky and bearing a copious *long-woolly indumentum* 32

32. Upper-surfaces of leaves with *stellate* pubescence; inflorescence irregularly *pyramidal*; flowers deep golden, with style *hardly cleft* (E. & N.E. foothills):

*P. aurea* N. A. Wakefield in *Vict. Nat.* 68: 140 (1951).

*Vern.*: Pomaderris. *Distr.*: RSVWZ—also N.S.W.

—Upper-surfaces of leaves with *simple* pubescence; inflorescence usually *corymbose*, with long bare branches; style *deeply cleft* (E. Gippsland, and very rare in N.E.):

*P. lanigera* (Andr.) Sims in *Curtis's bot. Mag.* 43: t. 1823, col. (1816).

*Ceanothus laniger* Andr. *Bot. Repos.* 9: t. 569, col. (1809).

*Illust.*: Andrews (*l.c.*); Willis, *Vict. Nat.* 58: 176 fig. 3 (1942), as *P. linigera*; Galbraith, *Wildflowers Vict.* ed. 3: t. 95 (1967); Anon., *Curtis's bot. Mag.* 43: t. 1823, col. (1816).

*Vern.*: Pomaderris. *Distr.*: SWZ—also N.S.W., Qd.

33. Leaves *oblanceolate*, their upper-surfaces *hispid* with stiff simple hairs, pilose beneath where often bearing some longer *stellate* hairs on the veins (scattered along streams in farther E. Gippsland):

*P. pauciflora* N. A. Wakefield in *Vict. Nat.* 68: 141 (1951).

*Vern.*: Pomaderris. *Distr.*: VWZ—also N.S.W.

—Leaves *narrowly elliptic*, their upper-surfaces *velvety* with dense minute hairs, pilose beneath with *simple* hairs only (very rare shrub at Ingeegoodbee in far E. Gippsland):

*P. pallida* N. A. Wakefield in *Vict. Nat.* 68: 141 (1951).

*Vern.*: Pomaderris. *Distr.*: V (Ingeegoodbee R.)—also N.S.W., A.C.T.

#### TRYMALIUM Fenzl in Endl. et al. (1837)

Leaves *narrow-linear*, *acute* to *acuminate*,  $\pm$  5-10  $\times$  1 mm., the margins *tightly revolute*; stipules *uniformly narrow*, somewhat curved, 2 mm. long or more; bracts lanceolate (endemic and scattered through Grampians, to 10 ft. high):

*T. d'altonii* F. Muell. *Fragm. Phyt. Aust.* 9: 135 (1875).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 109, col. (1968).

*Vern.*: Narrow-leaf Trymalium. *Distr.*: DI

[As far as known, this and the succeeding taxon are both endemic in the Victorian Grampians. At Melbourne Herbarium a specimen, presumed to have been collected by P. R. H. St. John in Apr. 1912, is labelled "dry hills north of Bacchus Marsh"; but its real origin is open to question.]

Leaves oblong-elliptic, blunt,  $\pm 5\text{-}10 \times 3\text{-}4$  mm., the margins only *slightly recurved*; stipules with *broad clasping bases*, erect and *straight*,  $\pm 1\cdot5$  mm. long; bracts *ovate* (very rare shrub of 1-2 ft., confined to Mt. Difficult range):

*T. ramosissimum* J. W. Audas in *Vict. Nat.* 38: 34, t. 1 (1921).

*Illust.*: Audas, *Vict. Nat.* 38: t. 1 (Aug. 1921); Audas, *One of Nature's Wonderlands* 59 (1925); Audas, *Aust. Bushland* t. opp. 283 (1950).

*Vern.*: Broad-leaf Trymalium. *Distr.*: DJ.

### SPYRIDIDIUM Fenzl in Endl. et al. (1837)

1. Normal leaves distinctly *lobed or toothed* at apex (low semi-shrubs of far W. and far E.) 6

Normal leaves acute or obtuse, quite *entire* at apex or, if occasionally somewhat emarginate, then on shrubs  $>2$  ft. tall 2

2. Leaves *orbicular to obovate* (rarely narrow-oblong), usually 5-10 mm. long, but occasionally to 2 cm., *obtuse*, sometimes emarginate, *strongly penni-veined* (and costate beneath),  $\pm$  hispid on upper-surface, the margin variably recurved; flowers in small heads forming terminal leafy cymes, subtended by *numerous*, creamy-white, relatively broader and emarginate floral leaves (widespread shrub 2-10 ft. high):

*S. parvifolium* (Hook.) F. Muell. *Fragm. Phyt. Aust.* 3: 79 (1862).

*Pomaderris parvifolia* Hook. *J. Bot., Lond.* 1: 257 (1834-35).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 96 (1967).

*Vern.*: Australian Dusty Miller. *Distr.*: CDEHJKMNPRSTVZ—also S.A., Tas., N.S.W.

—Leaves acute or not conspicuously penni-veined; specialized, white-felty floral leaves *very few or absent* 3.

3. Leaves *obovate-elliptic*, 4-8 mm. long, *flat*, the apex broadly acute and  $\pm$  *recurved*, both surfaces *lustrous* from a vestiture of minute *appressed silky hairs*; flower-clusters pedunculate, in leafy cymes, permanently invested with dark broad resinous bracts (extremely rare shrub on S. fringe of Big Desert):

*S. spathulatum* (F. Muell.) Benth. *Flor. aust.* 1: 430 (1863).

*Trymalium spathulatum* F. Muell. in *Trans. Vict. Inst.* 122 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 702 L (1952)—section of flower.

*Vern.*: Spoon-leaf Spyridium. *Distr.*: BC—also S.A., ? Cent. Aust.

[The typical form (Mt. Lofty, S.A.) differs from the isolated, Victorian Mallee population in its larger leaves (10-20 mm.) that are almost glabrous above. In

*Vict. Nat.* 73: 166 (1957) N. A. Wakefield assigned the latter to his new species *S. nitidum*—a much smaller-leaved plant of Kangaroo Id (S.A.) having very small *sessile* flower-clusters *devoid of bracts*. The present author believes that the Victorian plant is more closely related to *P. spathulatum* than to *P. nitidum*.]

—Leaves *linear* with closely *revolute margins*, or, if broader (rarely) then *never sericeous* 4

4. Leaves *obtus*e, 1-6 mm. wide, usually with a *hoary pubescence* on upper-surface; flowers in dense, subcapitate but *non-pedunculate leafy panicles*, microscopically stellate-hairy, *without* specialized floral leaves (Mallee and Wimmera):

*S. subochreatum* (F. Muell.) Reiss. in *Linnæa* 29: 287 (1858).

*Trymalium subochreatum* F. Muell. in *Trans. Vict. Inst.* 122 (1855).

*Vern.*: Velvet Spyridium. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

—Leaves *acute*,  $\pm$  *mucronate*, to 2 mm. wide, the upper-surface *glabrous* or nearly so; flowers in dense  $\pm$  *button-like heads* (4-6 mm. wide) on *distinct peduncles*, the hairs simple 5

5. Floral leaves 1-4 per head, *white-felty*, very distinct from and *much broader* than the green normal leaves which are 8-15 mm. long, 1-2 mm. wide and with at least the mid-vein apparent beneath (W. coastal heaths, Grampians & Little Desert):

*S. vexilliferum* (Hook.) Reiss. in *Linnæa* 29: 285 (1858).

*Cryptandra vexillifera* Hook. *J. Bot., Lond.* 1: 257 (1834-35).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 103, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 707 (1952); Suessenguth, *Natürl. PflFam.* ed. 2, 20d: fig. 31 c (1953).

*Vern.*: Winged Spyridium. *Distr.*: CDEJP—also W.A., S.A., Tas.

—Floral leaves *similar* to normal foliage; leaves 4-10 mm. long, <1 mm. wide, virtually *terete* with the under-surface *invisible* (Mallee, Grampians & far S.W.):

*S. eriocephalum* Fenzl in Endl. et al. *Enum. Plant. Hueg.* 24 (1837).

*Vern.*: Heath Spyridium. *Distr.*: ABCDEGJN—also S.A., Tas., N.S.W.

6. Leaves *cuneate*, 4-12 mm. long, the lamina deeply *bifurcate*, the margins *recurved* and upper-surfaces almost *glabrous*; inflorescence a dense woolly *pedunculate head* 7-12 mm. across, the floral leaves broad, bifid and white-felty on both surfaces (extremely rare plant of S. Little Desert):

*S. bifidum* (F. Muell. ex Reiss.) Benth. *Flor. aust.* 1: 432 (1863).

*Trymalium bifidum* F. Muell. ex Reiss. in *Linnæa* 29: 282 (1858).

*Vern.*: Forked Spyridium. *Distr.*: C—also S.A.

—Leaves *obovate*, *tridentate* at apex, 3-6 mm. long, densely *grey-pubescent* on both surfaces; flowers *not* in pedunculate heads 7

7. Middle apical tooth of leaf *shorter than* the lateral lobes, the margins often *slightly recurved*; flower-heads in small terminal *leafy cymes*; floral leaves smaller, whitish, sometimes entire (coastal heaths near Mallacoota, & N.E. Grampians):

*S. cinereum* N. A. Wakefield in *Vict. Nat.* 73: 165 (1957).

*S. serpyllaceum* sens. Ewart *Flor. Vict.* 750 (1931), *non* (Reiss.) F. Muell. (1862).

*Vern.*: Tiny Spyridium. *Distr.*: CZ.

- Middle apical tooth of leaf *as long as* the lateral ones, the margins *plane*; flowers very few in *sessile lateral or terminal clusters* within a group of normal leaves (very rare, N.W. Mallee):

*S. tridentatum* (Steud.) Benth. *Flor. aust.* 1: 427 (1863).

*Cryptandra tridentata* Steud. in Lehm. *Plant. Preiss.* 1: 186 (1844-45).

*Vern.*: Trident Spyridium. *Distr.*: ACF—also W.A.

#### CRYPTANDRA Sm. (1798)

1. Leaves *obovate to obcordate*, 3-6 mm. wide, with recurved apex, *whitish-tomentose* on both surfaces; flowers *narrowly tubular*, 4-5 mm. long, silky, sessile in a *dense head* 5-10 mm. diam., subtended by 2 or more *white-felty*,  $\pm$  orbicular floral leaves (low weak semi-shrub of Mallee):

*C. leucophracta* Schlechtendal in *Linnæa* 20: 640 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 702 F (1952)—flower; Suessenguth, *Natürl. PflFam.* ed. 2, 20d: fig. 7 M (1953); Weberbauer in Engler, *Natürl. PflFam.* III 5: fig. 174 M (1896)—flower.

*Vern.*: White Cryptandra. *Distr.*: ABCG—also W.A., S.A.

- Leaves *terete or narrow*, <3 mm. wide, mostly *glabrous* above; flowers  $\pm$  *campanulate*, in loose few-flowered heads or on leafy spikes, *without* specialized floral leaves (rigid shrubs 1 ft. high or more) 2

2. Leaves *flat* or with slightly recurved margins, 2-6 mm. long,  $\pm$  *oblan-ceolate*; calyx-tube silky with simple hairs, 3-5 mm. long, *much exceeding* the basal bracts and *longer than* the lobes (widespread shrub with branchlets often spine-tipped):

*C. amara* Sm. in Rees *Cyclopædia* 10: sub *Cryptandra* n. 2 (1808).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 709 (1952); Curtis, *Student's Flor. Tas.* 1: fig. 32 c (1956); Rudge, *Trans. Linn. Soc., Lond.* 10: t. 18 (1811); Banks & Solander, *Ill. Bot. Cook's Voy.* 1: t. 41 (1900); Burbidge, *Flor. Aust. Cap. Terr.* fig. 249 (1970).

*Vern.*: Bitter Cryptandra. *Distr.*: ABCDJMNRSVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

- Leaves *terete*, with *closely revolute* margins; calyx-tube usually *no longer* than brown bracts and mostly shorter than lobes 3

3. Calyx 2-3 mm. long, hoary with both simple and minute *stellate hairs*, the *broad lobes* about *as long as tube* (widespread in farther W., with isolated occurrences at Pt. Lonsdale, Brisbane Ra. and Rosedale Sth.):

**C. tomentosa** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 177 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 123 & 313, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 708 (1952); Suessenguth, *Natürl. PflFam.* ed. 2, 20d: fig. 7 J (1953); Weberbauer in Engler, *Natürl. PflFam.* III 5: fig. 194 J (1896)—flower.

*Vern.*: Prickly Cryptandra. *Distr.*: ABCDEFHJLMNPT—also W.A., S.A., N.S.W.

[A striking form with *dark red flowers* would seem to be confined to the Grampians.]

—Calyx 4-7 mm. long, white-silky with *simple hairs*, the *narrow lobes longer than tube* (Mallee sand-hills):

**C. propinqua** A. Cunn. ex Fenzl in Endl. et al. *Enum. Plant. Hueg.* 23 (1837).

*C. magniflora* F. Muell. *Fragm. Phyt. Aust.* 3: 65 (1862).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 186, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 710 (1952).

*Vern.*: Silky Cryptandra. *Distr.*: ABCFG—also S.A., N.S.W., A.C.T.

#### DISCARIA Hook. (1829)

**D. pubescens** (Brongn.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 620 (1917).

*Colletia pubescens* Brongn. in *Ann. Sci. nat. sér. 1*, 10: 366 (1827);

*D. australis* Hook. *Bot. Misc. 1*: 157 in nota, t. 45 fig. super. (1829).

*Illust.*: Hooker (*l.c.*); Willis, *Vict. Nat.* 72: 54 (inset) (1955); Burbidge, *Flor. Aust. Cap. Terr.* fig. 250 (1970).

*Vern.*: Australian Anchor Plant. *Distr.*: JNVWZ—also Tas. (? extinct), N.S.W., A.C.T., Qd (? extinct).

#### Family VITACEÆ

##### CISSUS L. (1753)

**C. hypoglauca** A. Gray in *U.S. explor. Exped. 15* (Bot. 1): 272 (1854).

*Vitis hypoglauca* (A. Gray) F. Muell. *Plants indig. Colon. Vict.* 1: 94 (1862).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 26 A & B (1886), as *Vitis hypoglauca*; Fairchild in *U.S. Dep. Agric. Bur. Plant Industr. (Invent. Seeds & Plants Imported)* n. 63: t. 2 (1963).

*Vern.*: Jungle Grape. *Distr.*: WZ—also N.S.W., Qd.

[Many horticultural varieties of the common grape, *Vitis vinifera* L., are grown in northern Victoria, and, although spontaneous seedlings are rare, occasional vines appear in unusual places—e.g. an old hardy specimen among rocks below

the retaining wall of Lake Catani on Mt. Buffalo (alt.  $\pm$  4500 ft.) was noted in Feb. 1963. The so-called "Boston Ivy", *Parthenocissus tricuspidatus* (Siebold & Zucc.) Planch. which is indigenous to Japan, appears frequently as a vigorous creeper on brick or stone walls, climbing by flat adhesive tips on its short tendrils; the acutely 3-lobed leaves (2-6" long) turn brilliantly red in late autumn. This popular member of the *Vitaceæ* is not spontaneous anywhere away from buildings.]

## Family MALVACEÆ

1. Epicalyx *lacking* 6  
Epicalyx *present*, consisting of 3-12 free or united bracteoles (sometimes small and subulate) 2
2. Floral bracteoles *connate below*, sometimes forming a cup-like involucre 5  
Floral bracteoles *free* to the base 3
3. Bracteoles 7-12; flowers *large* and showy (1-2" long); fruit a *capsule* *Hibiscus* (p. 374)  
Bracteoles 3; fruit of distinct carpels, *separating from each other* at maturity 4
4. Prostrate herb, *rooting at nodes*; petals *vermilion*, 4-6 mm. long; carpels 2-locular, each *resembling a horse's head* \**Modiola* (p. 377)  
Erect herbs or semi-shrubs, the branches *never* rooting; petals purplish, blue, pink or white; bracteoles *conspicuous*, *linear to ovate*; carpels 1-ovulate \**Malva* (p. 376)  
As for the last, but the small bracteoles *inconspicuous and subulate*, the stellately pubescent carpels 2- or 3-ovulate and flowers rosy-scarlet \**Sphaeralcea* (p. 375)
5. Bracteoles 6-12; flowers *large* and showy (1-3" long); fruit a *capsule* (leaf-blades <4" wide) *Hibiscus* (p. 374)  
As for the last, but fruiting *carpels falling away separately* and leaf-blades mostly 4-8" wide \**Althæa* (p. 375)  
Bracteoles 3; flowers to 1" long, rarely more; fruiting *carpels falling separately* *Lavatera* (p. 374)
6. Flowers showy, *blue to violet*; carpels 3, each 2-seeded; fruit a *3-valved capsule* (slender forest shrub to 8 ft.) *Howittia* (p. 377)  
Flowers yellow, white or greenish; if fruit ever capsular, then the valves 5-15 7
7. Petals 1-2 cm. long, *yellow*; ovules 2 or more per loculus; fruit  $\pm$  *capsular*, the 10-20 pointed fruitlets remaining *united at base* *Abutilon* (p. 378)  
Petals (at least in wholly female flowers) <1 cm. long, *yellow*; stigmas *capitate*; ovules only 1 per loculus; fruit *never* capsular, consisting of separate *seceding* fruitlets (under-shrubs normally with bisexual flowers) *Sida* (p. 379)  
As for the last, but petals white, cream or greenish and stigmas *linear* (flowers often unisexual) 8
8. Habit herbaceous or the white petals of male flowers >9 mm. long;



- style-branches 5-7, stigmatose along their entire length; fruitlets reticulate and  $\pm$  hyaline *Lawrencia* (p. 381)
- Habit *shrubby*; petals of male flowers <9 mm. long; fruitlets never both reticulate and hyaline 9
9. Leaves *sessile*, <1 cm. long; petals <5 mm. long; fruit of 1-3 hyaline cocci (*low*, rigid, *scaly*, often spinescent bush of Mallee): *Selenothamnus* (p. 381)
- Leaves stalked, >4 cm. long; petals 5-7 mm. long; fruit of 5 crustose cocci (*tall*,  $\pm$  *stellate-hairy* shrub or small tree of stream-banks and moist rocky places) *Gynatrix* (p. 381)

## HIBISCUS L. (1753)

Leaves *green*, *glabrescent*, palmately and *narrowly 3- to 5-lobed*; epicalyx of slender *free*, *straight-pointed*, narrow-linear, ciliate bracteoles; calyx 2-3 cm. long, shortly 5-lobed, *inflated and darkly veined*; flowers *yellow* with dark centre (annual herb, apparently indigenous to tropical N. Australia):

\**H. trionum* L. *Spec. Plant.* 2: 697 (1753).

*Illust.*: Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 34, col. (1967); Abrams, *Ill. Flor. Pacific States* 3: fig. 3227 (1951); Black, *Flor. S. Aust.* ed. 2: fig. 734 (1952); Muenscher, *Weeds* fig. 67 D-F (1947); *Curtis's bot. Mag.* 6: t. 209, col. (1792); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: fig. 1968 (1924).

*Vern.*: Bladder Ketmia. *Distr.*: BCGHKLMNRTWZ—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust., N.Z.

Leaves *white beneath* with a dense mat of stellate hairs, *orbicular-cordate and broadly toothed*; epicalyx of short, *apically recurved*, woolly bracteoles *fused below* to form an involucre cup; calyx <1 cm. long, the lobes lanceolate, woolly and *without* apparent veins; flowers *purplish* (rare tomentose shrub, to 4 ft., in Mallee):

*H. farragei* F. Muell. *Fragm. Phyt. Aust.* 8: 241 (1874).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 736 (1952); Gardner, *Wildflowers W. Aust.* 90, col. (1959); Chippendale, *Wildflowers Cent. Aust.* 61, col. (1968).

*Vern.*: Desert Rose Mallow. *Distr.*: AF—also W.A., S.A., N.S.W., N. Terr., Cent. Aust.

## LAVATERA L. (1753)

1. Epicalyx *longer than* calyx, the broadly ovate to orbicular, *blunt lobes enlarging in fruit*; corolla *rosy-purple* with *darker broad veins* coalescing towards base; cocci >2 mm. thick, with prominent *transverse dorsal wrinkles* and acute raised edges (chiefly coastal biennial 3-10 ft. high):

\**L. arborea* L. *Spec. Plant.* 2: 690 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 18 (1952); Rice, *Wild Flowers Cape Good Hope* t. 11 fig. 3, col. (1951); Coste, *Flor. Franc.* 1: fig. 620 (1901); Reichenbach, *Icon. Flor. germ.* 5: t. 178 fig. 4857, col. (1841); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 505, col. (1913).  
*Vern.*: Tree Mallow. *Distr.*: CLNPT—also W.A., S.A., Tas., N.S.W., N.Z.

—Epicalyx shorter than calyx, the acutish lobes never enlarging; corolla lilac, bluish or white, without conspicuous darker veins; cocci 1-2 mm. thick, dorsally smooth or only faintly wrinkled 2

2. Bracteoles  $\pm$  half the length of calyx which much exceeds and conceals the fruit; cocci with acute, somewhat raised dorsal edges (widespread but chiefly inland plant 2-8 ft. tall):

*L. plebeia* Sims in *Curtis's bot. Mag.* 48: t. 2269, col. (1821).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 239, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 712 A-E (1952); Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2 pt III: t. 21 (1960); Leigh & Mulham, *Pastoral Plants Riverine Plain* 97, col. (1965).  
*Vern.*: Australian Hollyhock. *Distr.*: ABCDEGHJKLMNPT—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[The var. *tomentosa* Hook. f. in Hook. *J. Bot., Lond.* 2: 412 (1840) is a stouter, white-flowered, maritime shrub, distinguished by the dense, velvety, stellate indumentum and fruiting cocci with more sharply raised dorsal edges than in the typical form. It occurs along the far S.W. coast, also in Tas., S.A. and W.A.]

—Bracteoles only slightly shorter than calyx which is appressed to but does not conceal the fruit; cocci quite smooth with blunt, rounded dorsal edges (occasional annual or biennial weed of Greater Melbourne area, 2-5 ft. tall):

\**L. cretica* L. *Spec. Plant.* 2: 691 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 3224 (1951); Coste, *Flor. Franc.* 1: fig. 621 (1901); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 506, col. (1913).  
*Vern.*: Cretan Hollyhock. *Distr.*: N—also N.S.W.

[Related to *Lavatera*, but with an epicalyx of 6-9 segments (united below to form a cup-like involucre), the genus *Althæa* is represented in many Victorian gardens by horticultural forms of *A. rosea* (L.) Cav., the common Hollyhock. This large-leaved robust perennial (to 10 ft.) has flowers of many colours (2-3" wide and sometimes double), and it may persist for years by successive seedlings; it was originally native to China.]

*Sphæralcea*, a red-flowered American plant, with 3 free linear bracteoles, is related to *Malva* (next genus in the present sequence), but differs in having more than one ovule to each carpel (usually 2 or 3 ovules). *S. cisplatina* St. Hil., indigenous to the La Plata River, Argentina, appeared along the Melbourne-Geelong railway line near Corio in Dec. 1959. Leaf-blades of this semi-shrub are 2-3 cm. long, ovate in outline but deeply toothed and obscurely 3-lobed. Their under-surfaces, as well as the branchlets and calyces, are whitish-woolly from a dense stellate vestiture, the rosy-scarlet petals are 6-9 mm. long and 3 short inconspicuous bracteoles almost filiform.]

## \*MALVA L. (1753)

1. Upper leaves *deeply incised*, with narrow lobes which may be further divided; lobes of epicalyx narrow-linear; corolla showy, pinkish, more than twice as long as the hairy calyx; carpels bristling with *dense hair*, but neither ribbed *nor* wrinkled (Gippsland where occasional and rare):

\**M. moschata* L. *Spec. Plant.* 2: 690 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 19 (1952); Curtis's bot. Mag. 49: t. 2298, col. (1822); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 182 fig. 1 col., also 5<sup>1</sup>: fig. 1981 & 1982 (1925); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 498 b, col. (1913); Coste, *Flor. Franc.* 1: fig. 615 (1901); Reichenbach, *Icon. Flor. germ.* 5: t. 169 fig. 4841, col. (1841).

*Vern.*: Musk Mallow. *Distr.*: TW—also Tas., N.Z.

—Upper and lower leaves *similar*, either subrotund *or* with a few broad lobes; carpels shortly hairy *or* glabrescent 2

2. Corolla *small*, barely exceeding calyx; calyx reticulately veined, *scarious*, enlarged and often strongly *reflexed in fruit*; epicalyx lobes narrow-linear; carpels manifestly wrinkled, with *sharply raised and toothed* margins, so that the whole fruit shows radiating ridges (widespread weed):

\**M. parviflora* L. *Demonstr. Plant.* 18 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 97 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 714 (1952); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 503, col. (1913); Coste, *Flor. Franc.* 1: fig. 619 (1901); Abrams, *Ill. Flor. Pacific States* 3: fig. 3219 (1951); Burbidge, *Flor. Aust. Cap. Terr.* fig. 252 (1970).

*Vern.*: Small-flowered Mallow. *Distr.*: ABCJKNPVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Corolla *conspicuous*, at least  $1\frac{1}{2}$  times as long as calyx which is neither stiffly scarious *nor* reflexed in fruit; margins of carpels *not* sharply raised and toothed 3

3. Epicalyx lobes *narrow-linear*; carpels *downy*, *never ribbed*, with rounded margins, so that the smooth fruit has radiating grooves (localized weed in Creswick-Newlyn area, E. Gippsland & N.E. valleys):

\**M. neglecta* Wallr. in *Syll. Plant. Nov. ratisbon.* 1: 140 (1824).

\**M. rotundifolia* sens Ewart *Flor. Vict.* 756 (1931) pro parte, *non* L. (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 21 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 182 fig. 3 col., also 5<sup>1</sup>: fig. 1987 (1925); Reichenbach, *Icon. Flor. germ.* 5: t. 167 fig. 4836, col. (1841), as *M. vulgaris*.

*Vern.*: Dwarf Mallow. *Distr.*: JLW—also Tas.

—Epicalyx lobes *lanceolate to ovate*; carpels almost *glabrous*, *reticulately ribbed* on the back and with rather sharp margins 4

4. Corolla *not* more than twice the length of calyx; epicalyx-lobes *ovate*,  $\pm$  oblanceolate or elliptical; pedicels *hairy* (widespread weed):

\**M. nicæensis* All. *Auctuar. Flor. Ped.* 2: 40 (1789).

\**M. rotundifolia* sens. Ewart *Flor. Vict.* 756 (1931) pro parte, *non* L. (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 713 (1952); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 501, *col.* (1913); Coste, *Flor. Franc.* 1: fig. 617 (1901); Reichenbach, *Icon. Flor. germ.* 5: t. 168 fig. 4838, *col.* (1841).

*Vern.*: Mallow of Nice. *Distr.*: CHJKMNPRSVW—also S.A., Tas., N.S.W.

—Corolla 3-4 times as long as calyx; epicalyx-lobes *lanceolate* to broadly oblong; pedicels *glabrous* (biennial up to 4 ft. high, in Melbourne area where rare and perhaps now extinct):

\**M. sylvestris* L. *Spec. Plant.* 2: 689 (1753).

var. *mauritiana* (L. ut sp., *l.c.*) Boiss. *Flor. orient.* 1: 819 (1867).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 5: t. 168 fig. 4839, *col.* (1841), as *M. mauritiana*. [Typical *M. sylvestris* is figured in colour by Pfenninger in Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 182 fig. 2 (1925), also in Reichenbach's *Icon. Flor. germ.* 5: t. 168 fig. 4840 (1841) and recently by Everard in *Wild Flowers World* t. 18 fig. B, *col.* (1970).]

*Vern.*: Tall Mallow. *Distr.*: NP—also N.Z.

[Typical *M. sylvestris*, with hairy stems and pedicels and less tender foliage, has not been collected or observed in Victoria. The record (for Dimboola) of *M. verticillata* L., published by Ewart in *Flor. Vict.* 756 (1931) was based upon misidentified, luxuriant material of *M. parviflora* L. His description (*l.c.*) of *M. rotundifolia* L. (an ambiguous name, now replaced by *M. pusilla* Sm.) is composite, embracing elements of both *M. neglecta* Wallr. and *M. nicæensis* All.; *M. pusilla* has the very small flowers of *M. parviflora*, but differs in its *much narrower herbaceous* calyx lobes and absence of toothed wings to the nuckles—it has not yet appeared in Victoria, but has been collected at Victor Harbour, S. Aust.]

\**MODIOLA* Moench (1794)

\**M. caroliniana* (L.) G. Don *Gen. Syst.* 1: 466 (1831).

*Malva caroliniana* L. *Spec. Plant.* 2: 688 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 728 (1952); *Curtis's bot. Mag.* 51: t. 2515, *col.* (1824), as *Malva prostrata*; Schumann in Engler, *Natürl. Pflfam.* III 6: fig. 16 L & M (1895); Abrams, *Ill. Flor. Pacific States* 3: fig. 3163 (1951); Burbidge, *Flor. Aust. Cap. Terr.* fig. 251 (1970).

*Vern.*: Carolina Mallow (Wheel Mallow, Creeping Mallow). *Distr.*: DGHJLMN PRSUUVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

*HOWITTIA* F. Muell. (1856)

*H. trilocularis* F. Muell. in *Hook. J. Bot. & Kew Gdns Misc.* 8: 8 (1856).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 469, *col.* (1968); Black, *Flor. S. Aust.* ed. 2: fig. 729 (1952); Read in Ewart, *Handb. For.*

*Trees* t. 110 (1925); Schumann in Engler, *Natürl. PflFam.* III 6: fig. 16 A & B (1895)—fruit; Blomberry, *Aust. Plants* 4<sup>th</sup>: 63, 92 col. (1967); Forster in Harris, *Wild Flowers Aust.* t. 11, col. (1947).  
*Vern.*: Blue Howittia. *Distr.*: CDJWXZ—also N.S.W.

### ABUTILON Mill. (1754)

1. Capsule *blackish*, much longer than calyx, each loculus with 2 *divergent awns* (2-4 mm. long) and 2-3 dark, smooth, pubescent seeds; petals 15-20 mm. long, *manifestly exceeding* the calyx (stout annual 1-3 ft. high, in Mallee and Wimmera):

*A. theophrasti* Med. *Malv.* 28 (1787).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 732 (1952); Muenscher, *Weeds* fig. 67 1 (1947); Georgia, *Manual Weeds* t. 193 (1914).

*Vern.*: Chingma Lantern. *Distr.*: ACGHJ—also W.A., S.A.

—Capsule *pale*, *not* or hardly longer than calyx, the loculi *without awns* and sometimes *seceding* from central axis (small shrubs of far N.W.) 2

2. Vestiture *dense, whitish-velvety*; petals *scarcely longer* than calyx; fruit *shorter than calyx*, remaining finely *villous*; seeds usually 3 per loculus, *glabrous and wrinkled*:

*A. otocarpum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 13 (1855).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 96, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 731 (1952).

*Vern.*: Desert Lantern. *Distr.*: AB—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Vestiture variable but *not* whitish, longer simple hairs being mixed with the stellate indumentum; petals *twice as long* as calyx; fruit about *same length* as calyx, ultimately almost *glabrous*; seeds 2 per loculus, *pubescent and smooth*:

*A. fraseri* (Hook.) Walp. *Ann. Bot. syst.* 2: 158 (1851).

*Sida fraseri* Hook. in Mitch. *J. Exped. trop. Aust.* 368 (1848).

*Vern.*: Dwarf Lantern-flower. *Distr.*: A (near Red Cliffs)—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[The tall pantropical herb *A. indicum* (L.) Sweet, "Indian Lantern-flower", was recorded as an introduction at Coode Island (near the Yarra R. mouth) in Mar. 1912; but it did not persist there and has never appeared elsewhere in Victoria. It somewhat resembles *A. fraseri*, but has twice as many (15-20) blackish, hairy fruiting-carpels that do not secede from the axis, and the leaves are often somewhat 3-lobed.

An occasional garden escape with long-hispid stems and petioles, and small yellow flowers in terminal *axillary racemes* longer than the leaves, has been erroneously called *A. molle* (Ortega) Sweet—a Peruvian species now regarded as referable to *A. arboreum* (L.) Sweet. The true identity of this tall shrub has not yet been established.

Cultivars of the handsome South American *A. striatum* Dicks. ("Chinese Lanterns") are widely grown throughout the State, but are apparently not self-propagating.]

## SIDA L. (1753)

1. Calyx with 10 prominent ribs or angles,  $\pm$  glabrescent, on erect rigid pedicels 1-3 cm. long; fruiting-carpels smooth-sided, each tapering into 2 sharp beaks or awns (erect perennial of 2-5 ft. in Kerang-Cohuna district; introduced from N.S.W. & Qd where indigenous):

\**S. rhombifolia* L. *Spec. Plant.* 2: 684 (1753).

*Illust.*: Maiden, *Agric. Gaz. N.S.W.* 5: t. opp. 537 (1894); Hope in Bailey & Gordon, *Plants poison. & injur. to Stock* t. opp. 5 (1887); Schumann in Engler, *Natürl. PflFam.* III 6: fig. 15 c (1895); Whittet, *Weeds* 320 (1958).

*Vern.*: Common Sida ("Paddy's Lucerne"). *Distr.*: GL—also S.A., N.S.W., Qd, N. Terr.

—Calyx neither ribbed nor angled, stellate-hairy; fruiting-carpels reticulate or honeycombed on the sides, without beaks or awns 2

2. Leaves reniform, mostly broader than long; calyx-lobes acute; petals creamy-buff, stellate-hairy on outside, twice the length of calyx (whole plant whitish from a dense vestiture of somewhat scale-like stellate hairs; occurring on northern irrigation settlements of Murray & Goulburn Valleys etc.):

\**S. leprosa* (Ortega) K. Schumann in Mart. *Flor. brasil.* 12<sup>2</sup>: 341 (1891).

[*Malva leprosa* Ortega *Nov. Plant. matrit.* dec. 8: 95 (1800).]

var. *hederacea* (Dougl. ex Hook.) K. Schumann *l.c.* 342 (1891).

*Malva hederacea* Dougl. ex Hook. *Flor. Bor.-Amer.* 1: 107 (1830);

*Sida hederacea* (Dougl. ex Hook.) A. Gray in *Mem. Amer. Acad. Arts Sci.* 4: 23 (1849).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 724 (1952); Jepson, *Manual flowering Plants California* fig. 628 (1925); Abrams, *Ill. Flor. Pacific States* 3: fig. 3225 (1951)—all as *S. hederacea*.

*Vern.*: Alkali Sida. *Distr.*: GLM—also S.A.

—Leaves sometimes  $\pm$  orbicular but not reniform, mostly longer than broad; petals yellow, glabrous externally, not or only slightly exceeding the calyx which is often blunt-lobed 3

3. Peduncles bearing a loose raceme; stipules long-persistent, pin-like and conspicuous; leaf-blades ovate-oblong, 2-4 cm. long, blunt or  $\pm$  truncate at apex, long-petiolate (1-3 cm.); calyx-lobes obtuse, distinctly shorter than corolla; fruit stellate-downy, 4-6 mm. wide, the wrinkled cocci finely 1-grooved at summit and deeply honeycombed on sides (Red Cliffs):

*S. fibulifera* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 45 (1838).

*Vern.*: Pin Sida. *Distr.*: A—also W.A., S.A., N.S.W., Qd, Cent. Aust,

—Peduncles with 1 or 2 flowers (rarely more); stipules neither long-persistent *nor* conspicuous

4. Leaf-blades *narrowly oblong-lanceolate to linear*, not or hardly cordate at base; either fruits glabrous or peduncles exceeding the leaves  
 Leaf-blades *orbicular to ovate-lanceolate*, boldly crenate,  $\pm$  *cordate at base* or, if not so, then fruits stellate-hairy and peduncles shorter than leaves
5. Fruits 5-7 mm. diam.; cocci *coarsely wrinkled* and almost cristate on the back, *deeply grooved* near summit, the sides with shallow faveolæ ( $\pm$  4 per mm.); peduncles 8-15 mm. long; leaves 8-20 mm. long, the branching *lax and open* (widespread in N. and W.):

*S. corrugata* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 12 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 98, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 720 (1952); Bailey, *Weeds & susp. poison. Plants Qd* fig. 45 (1906).

*Vern.*: Variable *Sida*. *Distr.*: ABCGMR—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[The var. *angustifolia* Benth. *Flor. aust.* 1: 193 (1863) differs only in its relatively narrower leaves (cordate-lanceolate to oblong) that are rather less densely tomentose, and is almost co-extensive with the more typical orbicular-ovate form.]

—Fruits only 3-5 mm. diam.; cocci *not* or hardly wrinkled on the back, *without* any groove near summit, the sides with a fine reticulum of faveolæ ( $\pm$  6 per mm.); peduncles 3-12 mm. long; leaves often <8 mm. long, ovate to cordate-oblong, the branching often *dense and twiggy* (Mallee and lower Murray Valley):

*S. intricata* F. Muell. in *Trans. phil. Soc. Vict.* 1: 12 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 723 (1952).

*Vern.*: Twiggy *Sida*. *Distr.*: ABLM—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

6. Leaves *grey or whitish* from a dense stellate indumentum, *conspicuously veined* on the under-side; peduncles 5-15 mm. long, shorter than leaves; calyx-lobes *acute*; fruiting cocci *glabrous*, *coarsely rugose* on back, 1-grooved at summit, their sides *deeply honeycombed* and walls of the reticulum  $\pm$  *torn into separate teeth* (Hattah Lakes Nat. Park, Red Cliffs and Mildura):

*S. ammophila* F. Muell. ex J. H. Willis in *Muelleria* 13: 131 (1967).

*Vern.*: Sand *Sida*. *Distr.*: A—also S.A., N.S.W., Qd, Cent. Aust.

—Leaves *green*, the stellate indumentum *sparse* and veins on under-side *inconspicuous*; peduncles usually exceeding the leaves, often >15 mm. long; calyx-lobes *obtuse*; fruiting cocci *downy*, *finely rugulose* on back, *not* grooved at summit, and with only *shallow* faveolæ in the *entire* reticulum of their sides (scattered throughout Mallee and lower Murray Valley):

*S. trichopoda* F. Muell. in *Linnæa* 25: 384 (1853).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 98, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 721 (1952).

*Vern.*: Narrow-leaf Sida. *Distr.*: ACLM—also S.A., N.S.W., Qd, Cent. Aust.

#### GYNATRIX Alef. (1862)

*G. pulchella* (Willd.) Alef. in *Öst. bot. Z.* 12: 35 (1862).

*Sida pulchella* Willd. *Enum. Plant. Hort. berol.* 724 (1809).

*Plagianthus pulchellus* (Willd.) A. Gray in *U.S. explor. Exped.* 15 (Bot. 1): 181 (1854).

*Illust.*: White-Honey in Ewart, *Handb. For. Trees* t. 109 (1925); Schumann in Engler, *Natürl. Pflfam.* III 6: 42 fig. 8 A (1895)—both as *Plagianthus pulchellus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 253 (1970).

*Vern.*: Hemp Bush. *Distr.*: EJKMNPRSTVW—also Tas., N.S.W., A.C.T.

#### SELENOTHAMNUS R. Melville (1966)

*S. squamatus* (Nees) R. Melville in *Kew Bull.* 20<sup>3</sup>: 515 (1966).

*Lawrenzia squamata* Nees in Lehm. *Plant. Preiss.* 1: 242 (1844-45);

*Plagianthus squamatus* (Nees) Benth. in *J. Linn. Soc. (Bot.)* 6: 103 (1862);

*P. microphyllus* F. Muell. *Fragm. Phyt. Aust.* 1: 29 (1858).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 167, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 718 (1952), as *Plagianthus microphyllus*.

*Vern.*: Thorny Lawrenzia. *Distr.*: ACFG—also W.A., S.A., N.S.W., Qd, N. Terr

#### LAWRENCIA Hook. (1849)

1. Leaves grey-green from a stellate pubescence, their petioles <1 cm. long; flowers on slender pedicels (often 1-2 cm. long); petals conspicuous, white, about 6 mm. long in female flowers but up to 12 mm. in males; styles 6-7, united for half their length; fruiting carpels stellate-bristly on the back, almost black,  $\pm$  2.5 mm. long, finely reticulate on sides with opaque, elongated alveolæ (rare slender shrub of far N.W. Mallee):

*L. berthæ* (F. Muell.) R. Melville in *Kew Bull.* 20<sup>3</sup>: 514 (1966).

*Plagianthus berthæ* F. Muell. *Fragm. Phyt. Aust.* 5: 103 (1866).

*Vern.*: Showy Lawrenzia. *Distr.*: A (near Mildura)—also W.A., S.A.

- Leaves light green, usually glabrous or almost so, the lower ones with long petioles (1-8 cm.); flowers subsessile; petals inconspicuous, yellow or greenish, <6 mm. long; styles and carpels 5, the former free almost to base, the latter glabrous (herbs) 2
2. Stem downy, branching freely from near base, usually <1 ft. high; leaf-blades mostly <3 cm. long (often downy when young); flowers in



*axillary clusters; calyx pubescent; petals entire; fruiting-carpels whitish, ± 2 mm. long, the delicately membranous walls forming a transparent lace-like reticulum* (Mallee and Wimmera):

**L. glomerata** Hook. *Icon. Plant.* 5: t. 417 (1842).

*Plagianthus glomeratus* (Hook.) Benth. in *J. Linn. Soc. (Bot.)* 6: 103 (1862).

*Illust.*: Hooker (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 717 (1952), as *Plagianthus glomeratus*.

*Vern.*: Clustered Lawrencia. *Distr.*: ABCGN—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Stem *glabrous, fleshy, simple* (rarely slightly branched), 1-3 ft. high; leaf-blades 2-7 cm. long, glabrous; flowers *solitary* in axils of long (1-2 cm.) *narrow erect bracts*, the whole forming a *dense cylindrical* terminal spike 6-18" long; calyx *glabrous*; petals *notched*; fruiting carpels *brownish*, 2-3 mm. long, hyaline and *very widely reticulate* on sides (coastal salt-marshes, rarer against inland salt lakes of W.):

**L. spicata** Hook. *Icon. Plant.* 3: t. 261-2 (1840).

*Plagianthus spicatus* (Hook.) Benth. in *J. Linn. Soc. (Bot.)* 6: 103 (1862).

*Illust.*: Hooker (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 716 (1952), as *Plagianthus spicatus*.

*Vern.*: Salt Lawrencia. *Distr.*: CEKNPWXZ—also W.A., S.A., N.S.W.

[The last three genera were for long included in a very wide and unsatisfactory circumscription of *Plagianthus* Forst. & Forst. f. (1776). This "complex" was revised by R. Melville in *Kew Bull.* 20<sup>3</sup>: 511-516 (1966), whereby *Plagianthus* (sens. strict.) has been limited to two species of taller shrubs or trees, both endemic in New Zealand.]

### Family STERCULIACEÆ

1. Flowers *unisexual*; petals absent; stamens 10-15, *united in a column*; fruiting foliicles 3-6 cm. long; leaves *glabrous*, often 3-lobed, ± 4 cm. long (tree of N.E. and E.) *Brachychiton* (p. 383)  
Flowers *bisexual*; stamens 5, *free* or almost so; capsules <2 cm. long; leaves ± *hairy*, *never* 3-lobed (shrubs) 2
2. Petals *absent* or minute and gland-like, the calyx petaloid; staminodes *absent*; capsule *not* bristly, enclosed in calyx 4  
Petals *present*, broad, conspicuous; staminodes *present*; capsule *bristly* and sometimes burr-like (uncommon eastern shrubs) 3
3. Flowers 5-8 mm. diam.; staminodes 5, *simple*, petal-like, alternating with stamens; capsule <12 mm. diam. (small to medium shrubs) *Rulingia* (p. 383)  
Flowers 8-10 mm. diam.; staminodes *deeply 3-lobed* (the central lobe much longer than laterals); capsule ± 20 mm. diam. (tall shrub of far E. Gippsland) *Commersonia* (p. 383)

4. *Stipules absent*; flowers in *short cymes*; calyx white, pink or brownish, *not* conspicuously veined *Lasiopetalum* (p. 384)  
*Stipules large and leafy*; flowers very few in *racemes*; calyx *mauve or lilac*, the midrib and pinnate veins conspicuous on the  $\pm$  papery segments (low coastal shrub on and W. of Wilson Prom.)  
*Thomasia* (p. 385)

## BRACHYCHITON Schott &amp; Endl. (1832)

- B. populneus* R. Br. in J. Bennett & R. Br. *Plant. Jav. rar.* 234 (1844).  
*Sterculia diversifolia* G. Don. *Gen. Syst.* 1: 516 (1831).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 217, col. (1968); Ewart, *Handb. For. Trees* t. 112 (1925); Gray, *Aust. Plants* 1<sup>o</sup>: 7 (Dec. 1961), as *B. populneum*; Goodacre, *Honey & Pollen Flor. N.S.W.* 151 (1938); Maiden, *For. Flor. N.S.W.* 7: t. 236 (1922); Burbidge, *Flor. Aust. Cap. Terr.* fig. 254 (1970).  
*Vern.*: Kurrajong. *Distr.*: GRVWZ—also N.S.W., Qd, N. Terr.

[Kurrajong normally grows on stony hill-slopes, and the unusual occurrence of 8 trees scattered along  $\pm \frac{1}{2}$  mile of alluvium on the Murray R. bank in Nyah Forest Reserve is probably the result of seed carried by floodwater from the highlands at least 400 river miles upstream.]

## RULINGIA R. Br. (1820)

Shrub spreading, 3-6 ft. high,  $\pm$  *villous* with long stellate hairs; leaves 1-4" long, *denticulate*; flowers in loose, *terminal* leafy cymes (E. Gippsland and N.E.):

- R. pannosa* R. Br. in *Curtis's bot. Mag.* 48: t. 2191, col. (1820).  
*Illust.*: *Curtis's bot. Mag. (l.c.)*; Loddiges, *Bot. Cabinet* 5: t. 491 (1820).  
*Vern.*: Kerrawang. *Distr.*: RW—also N.S.W., Qd.

Shrub *prostrate*, <1 ft. high, with *sparse, minute* stellate hairs; leaves 1-2" long, on slender petioles, *crenately lobed*; flowers in stalked *leaf-opposing* cymes (S. Gippsland):

- R. prostrata* Maiden & Betcher in *Proc. Linn. Soc. N.S.W.* 23: 18 (1898).  
*Vern.*: Dwarf Kerrawang. *Distr.*: TWX—also N.S.W.

[Perhaps no more than a variety of *R. hermannifolia* (J. Gay ex DC.) Steetz, from which it differs only in the relatively *broad*, much larger leaves; floral characters are virtually identical in both.]

## COMMERSIONIA Forst. &amp; Forst. f. (1776)

- C. fraseri* J. Gay in *Mém. Mus. Hist. nat., Paris* 10: 215, t. 15 (1823).  
*Illust.*: Gordon in Ewart, *Handb. For. Trees* t. 111 (1925); Gay (*l.c.*).  
*Vern.*: Blackfellows' Hemp. *Distr.*: Z (Genoa district)—also N.S.W., Qd.

## LASIOPETALUM Sm. (1798)

1. Leaves  $\pm$  *flaccid*, cordate and ovate to almost orbicular, the vestiture *sparse and loose*; cymes loose; bracteoles 1-2; style invested with *reflexed bristles* almost to the stigma (far S.W. coast):

*L. schulzenii* (F. Muell.) Benth. *Flor. aust. 1*: 265 (1863).

*Corethrostylis schulzenii* F. Muell. in *Trans. phil. Soc. Vict. 1*: 36 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 740 B-C & 748 (1952).

*Vern.*: Drooping Velvet-bush. *Distr.*: E—also S.A.

—Leaves *stiff*, *oblong-lanceolate to linear*, the vestiture on the under-surfaces *matted*; style *glabrous* or almost so 2

2. Calyx-lobes *glabrous* on their inner-surfaces 4

Calyx-lobes *stellate-tomentose* on their inner-surfaces; leaves *linear* 3

3. Flowers in *loose, long-pedunculate* cymes; calyx-lobes 4-5 mm. long, *finely stellate* (Cent. & W.):

*L. baueri* Steetz in Lehm. *Plant. Preiss. 2*: 339 (1848).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 740 E-G, 747 (1952); Fitch in *Curtis's bot. Mag. 105*: t. 6445, col. (1879).

*Vern.*: Slender Velvet-bush. *Distr.*: ABCD GJKLMNP—also S.A., N.S.W., Tas. (Tamar Heads).

—Flowers in *dense*, almost *sessile clusters*; calyx-lobes 6-8 mm. long, *coarsely rusty-stellate* (far E. Gippsland):

*L. ferrugineum* Sm. in Andr. *Bot. Repos. 3*: t. 208, col. (1802).

*Illust.*: *Curtis's bot. Mag. 42*: t. 1766, col. (1815); Sulman, *Some Familiar Wild Flowers t. 41* [1913]; Lubbock, *Seedlings 1*: fig. 119, 220 (1892).

*Vern.*: Rusty Velvet-bush. *Distr.*: Z—also N.S.W.

4. Cymes *dense, subsessile, coarsely rusty-tomentose*; calyx *very angular*; bracteoles *lanceolate*; leaves 2-4" long, >15 mm. wide, cordate or *oblong-lanceolate, acute* (Gippsland and Grampians):

*L. dasyphyllum* Sieber ex Hook. f. in Hook. *J. Bot., Lond. 2*: 414 (1840).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 108, col.* (1968).

*Vern.*: Shrubby Velvet-bush. *Distr.*: CDJSTWZ—also Tas., N.S.W.

—Cymes *loose, stalked, finely whitish-tomentose*; calyx *pink, slightly angular*; bracteoles *oblong,  $\pm$  2 mm.*; leaves mostly 1-2" long, rarely up to 15 mm. wide, narrowly *oblong to linear, blunt* (Big. & Little Deserts, also Murray Mallee):

*L. behrii* F. Muell. in *Trans. phil. Soc. Vict. 1*: 36 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 136, col.* (1968); Garnet, *Vegetation Wyperfeld Nat. Park fig. 12 n. 246* (1965); Black,

*Flor. S. Aust.* ed. 2: fig. 746 (1952); Mueller, *Key Syst. Vict. Plants* 2: fig. 20 (1886).

*Vern.*: Pink Velvet-bush. *Distr.*: ABCFGM—also S.A., N.S.W.

### THOMASIA J. Gay (1821)

*T. petalocalyx* F. Muell. in *Trans. phil. Soc. Vict.* 1: 35 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* fig. 299, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 99 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 740 A (1952); Garnet, *Wildflowers Wilson's Prom.* fig. 574 (1971).

*Vern.*: Paper-flower. *Distr.*: CKPT—also W.A., S.A.

[The small canescent South African shrub, *Hermannia velutina* DC., was collected on Coode Id (near Yarra R. mouth) in Mar. 1912; but, like several other casual introductions there early this century, it never became established.]

### Family ELÆOCARPACEÆ

#### ELÆOCARPUS L. (1753)

Leaf-blades  $7-12 \times 1.5-4$  cm., *strongly reticulate* with veins raised on upper-surface, sensibly *glabrous* on under-side; racemes *glabrous*; petals *fringed* or *deeply lobed*, 7-10 mm. long; anthers *pointed*; fruit *dark blue*, 9-12 mm. long (S. & E. Gippsland):

*E. reticulatus* Sm. in Rees *Cyclopædia* 12: sub *Elæocarpus* n. 6 (1809).

*E. cyaneus* Ait. ex Sims in *Curtis's bot. Mag.* 42: t. 1737, col. (1815).

*Illust.*: Ellery in Ewart, *Handb. For. Trees* t. 107 (1925); *Curtis's bot. Mag.* 42: t. 1737, col. (1815); Pescott, *Wild Life (Melb.)* 1: 24 (Oct. 1938); Sulman, *Some Familiar Wild Flowers* t. 38 [1913]; Forster in Harris, *Wild Flowers Aust.* t. 63, col. (1947)—all as *E. cyaneus*.

*Vern.*: Blue Oliveberry. *Distr.*: STWXZ—also Tas., N.S.W., Qd.

Leaf-blades  $3-6 \times 1-2$  cm., *rugose*, the primary veins *immersed* on upper-surface, *creamy- or brownish-tomentose* on under-side; racemes *rusty-tomentose*; petals *entire* or slightly crenulate,  $\pm 6$  mm. long; anthers *obtuse*; fruit almost *black*,  $\pm 8$  mm. long (far E. Gippsland):

*E. holopetalus* F. Muell. *Fragm. Phyt. Aust.* 2: 143 (1861).

*Illust.*: Ellery in Ewart, *Handb. For. Trees* t. 108 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 22 (1886).

*Vern.*: Black Oliveberry. *Distr.*: VWZ—also N.S.W.

### Family DILLENiaceæ

#### HIBBERTIA Andr. (1800)

1. Anthers in a single group on one side of the 2 carpels 11
- Anthers surrounding the 3 or more carpels (rarely 1 or 2 by reduction);

- but occasionally reduced to a group on one side, with only 1 or 2  
anthers on the opposite side 2
2. Carpels *glabrous* 6  
Carpels *pubescent* 3
3. Leaves *linear*, 3-8 mm. long, with margins *closely revolute* and thickened  
so as to obscure the under-surface; indumentum of *simple glandular*  
*hairs* 5  
Leaves *obovate*,  $\pm$  *cuneate to emarginate*, 5-14 mm. long, the margins  
*slightly recurved*, covered beneath with a dense greyish indumentum of  
*stellate hairs* (E. Gippsland shrubs to 4 ft. high) 4
4. Vestiture of leaves a dense greyish velvety mat of *minute sessile stellate*  
*hairs*, *uniform* on both surfaces; midrib on under-side prominently  
*raised and thickened*; flowers *subsessile*; stamens numerous (normally  
 $\pm$  17); carpels 3 (apparently endemic in E. Gippsland, at Suggan  
Buggan & near Snowy R. east from Butcher's Ridge):

*H. spathulata* N. A. Wakefield in *Vict. Nat.* 73: 166 (1957).

*Vern.*: Guinea-flower. *Distr.*: W.

—Vestiture of leaves *different* on each surface, the upper-side *green* and  
bearing short *simple tubercle-based bristles*, the under-side greyish  
with *coarse stalked stellate hairs* rising from a mat of minute sessile  
stellulæ; midrib *relatively thin* and inconspicuous; flowers on *pedicels*  
5-10 mm. long; stamens 8-12; carpels 2 (summit of Mt. Elizabeth,  
N.N.E. of Bruthen):

*H. hermanniifolia* DC. *Regn. Veg. Syst. nat.* 1: 431 (1817).

*Vern.*: Guinea-flower. *Distr.*: W—also N.S.W.

[The very isolated Victorian population departs from the typical N.S.W. form  
(Bent's Basin on the Nepean R.) in its rather smaller leaves, shorter pedicels and  
fewer stamens ( $\pm$  15 in typical form).]

5. Flowers *sessile* or almost so (*erect* shrub of N.E. & far E.—chiefly  
subalpine):

*H. ?serpyllifolia* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 430 (1817).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 3, col. (1855), as *H. ericæfolia*.

*Vern.*: Guinea-flower. *Distr.*: RSVWZ—also Tas., N.S.W.

[The identification of Victorian populations by this name is at present tentative.]

—Flowers on *slender pedicels* (*sprawling or prostrate* shrub of alps and  
Gippsland):

*H. ?pedunculata* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 430 (1817).

*Illust.*: Edwards's bot. Register 12: t. 1001, col. (1826); Loddiges, *Bot. Cabinet* 12:  
t. 1139 (1826).

*Vern.*: Guinea-flower. *Distr.*: RSVWZ—also N.S.W.

[Victorian plants need further investigation before their true affinities are certain.]

6. Stems *long-trailing* (for several feet); leaves *ovate, petiolate, sinuately toothed*; flowers 2.5-4 cm. wide; stamens *very numerous*, with staminodes outside them (E. Gippsland):

*H. dentata* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 426 (1817).

*Illust.*: Curtis's bot. Mag. 49: t. 2338, col. (1822); Edwards's bot. Register 4: t. 282, col. (1818); Smith, *Wild Life (Melb.)* 15: 557 (1952); Forster in Harris, *Wild Flowers Aust.* t. 36, col. (1947).

*Vern.*: Trailing Guinea-flower. *Distr.*: Z—also N.S.W., Qd.

—Stems prostrate or erect, but *not trailing*; leaves *linear to obovate* or *spathulate*; flowers <2.5 cm. wide, without staminodes 7

7. Flower *sessile* within 2 or 3 *large brownish bracts* about *half as long as calyx*; leaves *narrow-linear, glabrous*, usually 1.5-2 cm. long or more (Mallee and Gippsland):

*H. virgata* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 428 (1817).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 752 (1952); Hooker, *Icon. Plant.* 3: t. 267 (1840).

*Vern.*: Guinea-flower. *Distr.*: BCDGHJMNSTWXZ—also S.A., Tas., N.S.W., Qd.

[The var. *crassifolia* (Benth. ut *H. fasciculata* var.) J. M. Black *Flor. S. Aust.*: 387 (1926) differs in its rather shorter (<2 cm.) almost terete leaves which are sparsely pubescent with minute curly hairs; it is the usual form in the N.W. Victorian Mallee.]

—Flowers with *very small basal bracts*: 8

8. Leaves *obovate to spatulate*, the margins a little *recurved*; flowers *subsessile* 1

Leaves *narrow-linear*, the margins *flat* or slightly incurved; flowers *quite sessile* within clusters of leaves (widespread on lowland heaths) 9

9. Stems *erect* or *sprawling*; leaves *in clusters*,  $\pm$  1 cm. long or less,  $\pm$  1 mm. wide, soft and normally *hirsute*; flowers on very short lateral branches, rather small, the sepals  $\pm$  5 mm. long:

*H. fasciculata* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 428 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 39, col. (1968); Bishop, *Vict. Nat.* 71: 107 (1954); Comber in *J. roy. hort. Soc. Lond.* 57: t. opp. 32 (1932).

*Vern.*: Bundled Guinea-flower. *Distr.*: CDEJKMNPSTWZ—also S.A., Tas., N.S.W., Qd.

[Southern populations, including all in Vic., differ in several respects from the typical (N.S.W.) *H. fasciculata* and may be taxonomically separable.]

—Stems  $\pm$  *prostrate*; leaves *scattered*,  $\pm$  2 cm.  $\times$  2 mm., *glabrous* or nearly so; flowers large, the sepals almost 10 mm. long:

*H. procumbens* (Labill.) DC. *Regn. Veg. Syst. nat.* 1: 427 (1817).

*Dillenia procumbens* Labill. *Nov. Holl. Plant. Specim.* 2: 16, t. 156 (1806).

*Illust.*: Labillardière (*l.c.*); King & Burns, *Wildflowers Tasm.* 9, col. (1969); Garnet, *Wildflowers Wilson's Prom.* fig. 580 (1971); Morcombe, *Aust. Wildflowers* t. on [24], col. (1970).

*Vern.*: Guinea-flower. *Distr.*: DKNPSTW—also Tas.

10. Shrub *erect*, *hoary-tomentose*; leaves mostly 2-3 cm. long, *entire*, *oblanceolate*, very blunt (widespread in hilly districts):

*H. obtusifolia* DC. *Regn. Veg. Syst. nat.* 1: 429 (1817).

*H. linearis* R. Br. ex DC. var. *obtusifolia* (DC.) Benth. *Flor. aust.* 1: 36 (1863).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 325, col. (1968) as *H. linearis* var. *obtusifolia*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 255 (1970); Morcombe, *Aust. Wildflowers* t. on [38], col. (1970).

*Vern.*: Guinea-flower. *Distr.*: DJMNRSTVWZ—also Tas., N.S.W., A.C.T., Qd.

—Shrub mostly *procumbent*, almost *glabrous*; leaves usually 1-2 cm. long, with *acute* or *obtuse lobes*, or *entire* but with a  $\pm$  dilated *bilobed apex* and recurved point (Gippsland):

*H. diffusa* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 429 (1817).

*Vern.*: Guinea-flower. *Distr.*: STWZ—also N.S.W., Qd.

11. Carpels *pubescent* 13  
Carpels and calyx quite *glabrous*; stems *red and polished*; leaves *linear*,  
6-12 mm. long 12

12. Stems *weak*,  $\pm$  *trailing*; leaf-tips *bluntish*, but with a minute *tuft of white hairs*; flowers on *slender pedicels*; stamens 4, the filaments united (stream banks in far E. Gippsland):

*H. rufa* N. A. Wakefield in *Vict. Nat.* 72: 119 (1955).

*Illust.*: Wakefield, *Vict. Nat.* 72: 121 fig. 3 (1955).

*Vern.*: Guinea-flower. *Distr.*: Z—also N.S.W.

—Stems *stout*, *erect*; leaf-tips almost *pungent*, *without* any hair-tuft; flowers *sessile*; stamens  $\pm$  6 (Grampians):

*H. cistiflora* (Sieber ex Spreng.) N. A. Wakefield in *Vict. Nat.* 72: 119 (1955).

*Pleurandra cistiflora* Sieber ex Spreng. *Syst. Veg.* 4<sup>2</sup>: 191 (1827);

*H. stricta* var. *glabriuscula* Benth. *Flor. aust.* 1: 27 (1863).

*Illust.*: Wakefield, *Vict. Nat.* 72: 121 fig. 4 (1955).

*Vern.*: Guinea-flower. *Distr.*: DJ—also N.S.W.

13. Leaves narrowly *elliptic to obovate*, the margins recurved or  $\pm$  *revolute* but under-surface of the lamina quite *visible* (at least on the broadest leaves) 19

Leaves *linear*, the margins *revolute* and mid-rib thickened *so as to conceal* the under-surface of lamina (or the leaves  $\pm$  *terete* and about 1 mm. wide) 14

14. Leaves *needle-pointed*, at least when young 18  
 Leaves *not* needle-pointed 15
15. Habit *prostrate*; leaves  $\pm$  *terete*,  $\pm$  1 mm. wide; flowers on long *slender pedicels*; whole plant invested with *shining silky spreading hairs* (endemic on Mt. Zero and a few other parts of Grampians where rare):

*H. humifusa* F. Muell. *Plants indig. Colon. Vict.* 1: 16, suppl. t. 1 (1862).

*Illust.*: Mueller (*l.c.*); Mueller, *Key Syst. Vict. Plants* 2: fig. 2 (1886).

*Vern.*: Grampians Guinea-flower. *Distr.*: CDJ.

Habit *erect*; leaves  $\pm$  *flattened*; either the flowers sessile or the vestiture dull grey to brownish and not silky 16

16. Leaves *acutish*, the midrib on under-side *depressed* below the revolute margins; flowers *sessile*, subtended by acute bracts; calyx invested with  $\pm$  *forwardly appressed* hairs; stamens numerous (6-18); vestiture of *mixed* simple and *stellate* hairs:

*H. calycina* (DC.) N. A. Wakefield in *Vict. Nat.* 72: 122 (1955).

*Pleurandra calycina* DC. *Regn. Veg. Syst. nat.* 1: 422 (1817);

*H. stricta* (DC.) F. Muell. var. *calycina* (DC.) Benth. *Flor. aust.* 1: 27 (1863).

*Illust.*: Wakefield, *Vict. Nat.* 72: 121 fig. 7 & 8 (1955).

*Vern.*: Guinea-flower. *Distr.*: CDRSTW—also N.S.W.

—Leaves *obtuse*, the midrib *not* depressed; flowers *stalked* or only sub-sessile, *not* subtended by acute bracts; stamens few (4-9); vestiture *mainly or entirely stellate* 17

17. Flowers always *pedicellate*; inner surfaces of sepals *shining*; calyx (and usually foliage) invested with *tubercle-based* stellate hairs only (widespread in S. districts):

*H. australis* N. A. Wakefield in *Vict. Nat.* 72: 120 (1955).

*H. stricta* sens. Ewart *Flor. Vict.* 769 (1931) pro parte, *non stricta* (DC.) R. Br. ex F. Muell. (1862).

*Illust.*: Wakefield, *Vict. Nat.* 72: 121 fig. 9 (1955).

*Vern.*: Guinea-flower. *Distr.*: DEJKNPRT—also S.A.

—Flowers usually *subsessile* (sometimes shortly pedicellate); inner surfaces of sepals *dull*; calyx and foliage bearing non-tuberculate hairs, often intermixed with  $\pm$  simple ones, but sometimes the leaves and calyxes appearing almost glabrous (nearly ubiquitous shrubs, exhibiting great variation in length of leaves, elongation of pedicels and development of vestiture):

*H. stricta* (DC.) R. Br. ex F. Muell. *Plants indig. Colon. Vict.* 1: 15 (1862).

*Pleurandra stricta* DC. *Regn. Veg. Syst. nat.* 1: 422 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 7, col. (1968); Wakefield, *Vict. Nat.* 72: 121 fig. 5 & 6 (1955); Black, *Flor. S. Aust.* ed. 2: fig. 751 (1952); Garnet, *Wildflowers Wilson's Prom.* fig. 582 (1971).



*Vern.*: Erect Guinea-flower. *Distr.*: ABCDEHJLMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., Qd.

[The var. *canescens* Benth. *Flor. aust. 1*: 27 (1863) includes the more downy populations, and is abundant in many parts of Victoria.]

18. Calyx bearing *sparse minute hooked bristles*; flowers *pedicellate*; needle-points of leaves *persistent*; stems wiry, *sprawling* (coast at and east from the Otways):

*H. acicularis* (Labill.) F. Muell. *Plants indig. Colon. Vict. 1*: 17 (1862).

*Pleurandra acicularis* Labill. *Nov. Holl. Plant. Specim. 2*: 6, t. 144 (1806).

*Illust.*: Labillardière (*l.c.*); Wakefield, *Vict. Nat. 72*: 121 fig. 1 (1955); Garnet, *Wildflowers Wilson's Prom.* fig. 575 (1971).

*Vern.*: Prickly Guinea-flower. *Distr.*: KNPTWXZ—also Tas., N.S.W., Qd.

[The var. *triandra* Ewart *Flor. Vict.* 770 (1931), presumably based upon *Pleurandra triandra* Turcz., is said to differ in its extremely short leaves ( $\pm 3$  mm.) and few stamens, but the taxon is not known to occur in Victoria.]

—Calyx *glabrous*; flowers *sessile*; needle-points of leaves *deciduous*; stems rather stout, *quite prostrate* (N. & W. auriferous terrain):

*H. exutiacies* N. A. Wakefield in *Vict. Nat. 72*: 118 (1955).

*H. acicularis* sens. Ewart *Flor. Vict.* 770 (1931) pro parte, *non strict.* (Labill.) F. Muell. 1862.

*Illust.*: Wakefield, *Vict. Nat. 72*: 121 fig. 2 (1955).

*Vern.*: Guinea-flower. *Distr.*: DEGHJMN RV—also S.A.

19. Stems mostly *erect*, several from the base, *little branched*; leaves oblong or elliptical, usually 1-3 cm. long, the margins *revolute*; flowers large, normally *sessile* in clusters within broadened floral leaves (rarely stoutly pedicellate and lacking the floral leaves); vestiture, especially on calyx, mainly of long *silky spreading simple hairs* (widespread on lowland heaths):

*H. sericea* (R. Br. ex DC.) Benth. *Flor. aust. 1*: 26 (1863).

*Pleurandra sericea* R. Br. ex DC. *Regn. Veg. Syst. nat. 1*: 416 (1817).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 750 (1952); Ewart, *Flor. Vict.* fig. 291 (1931); Galbraith, *Wildflowers Vict.* ed. 3: t. 98 (1967); Delessert, *Icon. Plant. 1*: t. 79 (1820), as *Pleurandra sericea*.

*Vern.*: Silky Guinea-flower. *Distr.*: ABCDEHJKMNPRSTWZ—also S.A., Tas., N.S.W., Qd.

[The var. *scabrifolia* J. M. Black in *Trans. roy. Soc. S. Aust.* 49: 274 (1925) is distinguished by its short (4-6 mm.) rigid leaves that have relatively long, scattered, bristly hairs but a  $\pm$  shining lamina. It is abundant in the Little and Big Deserts, N.W. Victoria.]

—Stems often *sprawling or trailing*, *much branched*; leaf-margins somewhat recurved but *not revolute*; flowers usually  $<1.5$  cm. wide, on *slender*

*pedicels*, terminating short branchlets or appearing lateral (moister southern and near-coastal districts, often 4-8 ft. tall) 20

20. Leaves usually *broadly obovate to oblanceolate*, often >1 cm. long; vestiture mainly *stellate*, usually forming a *dense whitish felt* on under-surfaces of leaves (rarely intermixed with some minute hooked hairs), but sparser and usually including fine silky hairs on calyx, branchlets and upper-sides of leaves; flowers 1-1.5 cm. across:

*H. aspera* DC. *Regn. Veg. Syst. nat.* 1: 430 (1817).

*H. ovata* var. *monadelpha* & var. *parviflora* Ewart *Flor. Vict.* 769 (1931) [presumably based upon *H. billardieri* var. *monadelpha* Benth. *Flor. aust.* 1: 28 (1863) and *Pleurandra parviflora* R. Br. ex DC. *Regn. Veg. Syst. nat.* 1: 48 (1817)].

*Illust.*: Rosser, *Wildflowers Vict.* 73, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 577 (1971).

*Vern.*: Guinea-flower. *Distr.*: EKTWZ—also S.A., N.S.W.

—Leaves usually *elliptical* and <1 cm. long; vestiture mainly *simple*, consisting of *minute hooked hairs* on under-surfaces of leaves (often also on calyx, but rarely on upper surfaces of foliage), with *scattered stiff bristles* on the upper-sides and often also on stems and calyces; *stellate* vestiture, if ever present, restricted to stems, calyces and/or ribs of leaves; flowers rarely >1 cm. across (plants weak, often long-trailing with wiry stems):

*H. astrotricha* (Sieber ex Spreng.) N. A. Wakefield in *Vict. Nat.* 73: 167 (1957).

*Pleurandra astrotricha* Sieber ex Spreng. *Syst. Veg.* 4<sup>2</sup>: 191 (1827);

*P. ovata* Labill. *Nov. Holl. Plants Specim.* 2: 5, t. 143 (1806);

*H. ovata* (Labill.) anon. in *Census Plants Vict.* (Field Nats Cl. Vict.) 44 (1923), non Steud. in Lehm. (1844-45);

*H. billardieri* F. Muell. *Plants indig. Colon. Vict.* 1: 14 (1862).

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Guinea-flower. *Distr.*: EKRSTVWZ—also S.A., Tas., N.S.W., Qd.

### Family EUCRYPHIACEÆ

EUCRYPHIA Cav. (1797)

*E. moorei* F. Muell. *Fragm. Phyt. Aust.* 4: 2 (1863).

*Illust.*: Derrick in Ewart, *Handb. For. Trees* t. 113 (1925); Ross-Craig in *Curtis's bot. Mag.* 158: t. 9411 *col.*, also fig. in text (1935).

*Vern.*: Eastern Leatherwood. *Distr.*: Z (Howe Range)—also N.S.W. (south of Wollongong).

### Family HYPERICACEÆ

HYPERICUM L.

1. Flowers  $\pm$  2 cm. wide or more; stamens united at base in 3 or 5 separate bundles (plants woody at base and often 2-4 ft. high) 3

Flowers <1.5 cm. wide; stamens *free* or nearly so (perennial herbs <1.5 ft. high). 2

2. Stems weak, *procumbent*, often matted; leaves *not* stem-clasping, 4-8 mm. long, *obovate-oblong, flat*; flowers few, *often solitary*, <8 mm. wide (tender herb of damp shaded ground):

**H. japonicum** Thunb. *Flor. Japon.* 295, t. 31 (1784).

*Illust.*: Thunberg (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 775 (1952); Bailey, *Compr. Cat. Qd Plants* fig. 37 (1913).

*Vern.*: Matted St. John's Wort. *Distr.*: DEJKNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Stems *erect*; leaves *stem-clasping*, usually 10-20 mm. long, <1 cm. wide, *oblong-lanceolate*, the margins  $\pm$  *recurved*; flowers *orange-yellow*, 8-12 mm. wide, in *loose, leafy dichotomous cymes*; sepals *blunt* (very widespread herb without stolons):

**H. gramineum** Forst. f. *Flor. Ins. Aust. Prodr.* 53 (1786).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 363, col. (1968), as *H. japonicum*; Black, *Flor. S. Aust.* ed. 2: fig. 754 (1952); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 418, col. (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 256 (1970).

*Vern.*: Small St. John's Wort. *Distr.*: ACDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust., N.Z.

—As for the last, but leaves >1 cm. wide, *broadly elliptic and flat*, the *pale yellow* flowers numerous in short *dense terminal cymes* and sepals *acuminate* (stoloniferous water-loving plant along Woori Yallock Creek):

\***H. tetrapterum** Fries *Nov. Flor. Suec.* ed. alt.: 236 (1828).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 9 (1952); Reichenbach, *Icon. Flor. germ.* 6: t. 344 fig. 5179, col. (1844); Coste, *Flor. Franc.* 1: fig. 678 (1901).

*Vern.*: Square-stem St. John's Wort. *Distr.*: N.

3. Leaves *narrowly oblong*, 1-2 cm.  $\times$  2-5 mm., the *plane margins*  $\pm$  *recurved* and under-surfaces manifestly *dotted with black glands*; flowers very numerous, in leafy *cymose corymbs*; sepals *connate* at base; petals *persistent*, 1 cm. long or more; stamens in 3 bundles (noxious rhizomatous perennial 1-3 ft. high, chiefly in N.E. and central districts):

\***H. perforatum** L. *Spec. Plant.* 2: 785 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 756 (1952); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 9, col. (1958); Knight in Parsons, *J. Dep. Agric. Vict.* 55: 785 (1957); Ross-Craig, *Drawings Brit. Plants* 6: t. 7 (1952); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 183 fig. 4, col. (1925); Coste, *Flor. Franc.* 1: fig. 677 (1901); Abrams, *Ill. Flor. Pacific States* 3: fig. 3234 (1951).

*Vern.*: St. John's Wort. *Distr.*: DJMNPRSTW—also W.A., S.A., Tas., N.S.W., N.Z.

—Leaves *ovate-lanceolate*,  $\pm 1$  cm. long, the *undulate margins not recurved* and under-surfaces *not* conspicuously gland-dotted; flowers very numerous in large leafy *pyramidal panicles*; petals *persistent*,  $<1$  cm. long (localized weed in Tarnagulla district, Jan. 1967):

\**H. triquetrifolium* Turra *Farsetia*, *novum Genus* 12 (1765).

*Illust.*: Reichenbach, *Icon. Flor. germ.* 6: t. 345 fig. 5181, *col.* (1844); Bouloumoy, *Flor. Liban & Syrie* t. 68 (1930)—both as *H. crispum*.

*Vern.*: Wavy-leaf St. John's Wort. *Distr.*: H.

—Leaves *broadly ovate or elliptic*,  $>3$  cm. long,  $>1$  cm. wide, *flat*; flowers few; sepals *free*; petals *deciduous*; stamens connate in 5 bundles 4

4. Plant *rhizomatous*, extensively creeping; stems bluntly *quadrangular*; leaves *elliptic*, narrowed toward base, finely reticulate beneath; flowers *solitary*, 5-8 cm. wide; styles 5 (occasional garden escape in settlements of W. and N.E.):

\**H. calycinum* L. *Mant. Plant.* 1: 106 (1767).

*Illust.*: Curtis's *bot. Mag.* 5: t. 146, *col.* (1791); Davey, *J. Dep. Agric. Vict.* 20: 14 & 15 (1922); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: fig. 1993 a (1925); Bailey, *Standard. Cycl. Hort.* 2: fig. 1940 (1935); Everard, *Wild Flowers World* t. 45, fig. D *col.*, (1970).

*Vern.*: Large-flower St. John's Wort ("Aaron's Beard"). *Distr.*: KNR—also Tas.

—Plant shrubby, *non-rhizomatous*; stems *not* 4-angled; leaves *ovate*, broad and  $\pm$  *cordate* at base, with a strong-curry-like odour when crushed or dried; flowers *several together*,  $<3$  cm. wide; styles 3 5

5. Leaves greyish beneath, *without* a fine reticulum; petals *hardly longer* than the *obtus* sepals; styles *shorter than* stamens; fruit *indehiscent*, becoming *fleshy and purplish-black* (chiefly central highland areas):

\**H. androsæmum* L. *Spec. Plant.* 2: 784 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 6: t. 6 (1952); Cock, *Tasm. J. Agric.* 24: 242 fig. A (1953); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: fig. 1999 & 2011 k-l (1925); Davey, *J. Dep. Agric. Vict.* 20: 12, 13 (1922); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 561, *col.* (1913), as *Androsæmum officinale*.

*Vern.*: Tutsan. *Distr.*: CJKNSVT—also Tas., N.S.W., N.Z.

—Leaves *minutely and finely reticulate* on under-side; petals *much longer* than the *acute* sepals; styles *longer than* stamens; fruit *dehiscent*, dry and capsular (noted at Warracknabeal in Dec. 1954, but doubtfully naturalized, also at Kyneton):

\**H. elatum* Ait. *Hort. kew.* 3: 104 (1789).

*Illust.*: Syme, *Engl. Bot.* 2: t. 265 (1864).

*Vern.*: Tall St. John's Wort. *Distr.*: CN:

The tall *H. floribundum* Dryand. in Ait., of Canary Islands, was found to be growing spontaneously in a fenced reserve against the Beach Road near Rickett's Point Beaumaris, in Dec. 1949. This handsome species has linear-lanceolate.

oleander-like leaves 2-3" long and numerous flowers in terminal cymose panicles 3-4" wide; its 3 styles are longer than the almost free stamens, and the very short broad sepals are ciliate.]

### Family ELATINACEÆ

Leaves *entire*; flowers *sessile*, *solitary* in the axils; sepals *obtus*e, thinly membranous; stigmas *linear-oblong* (plants in water or on wet mud)

*Elatine* (p. 394)

Leaves  $\pm$  *serrulate* with minute glandular teeth; flowers *pedicellate*, in dense *axillary clusters*; sepals *acute*, herbaceous or thickened along centre; stigmas  $\pm$  *globose* (land-plants—Wimmera & Emerald) *Bergia* (p. 394)

[In his *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 427 (1959), J. Hutchinson has transferred this family from the order *Tamaricales* to the *Caryophyllales*—a procedure adopted in Beadle, Evans & Carolin's *Handb. vasc. Plants Sydney District* 149 (1962).]

### ELATINE L. (1753)

*E. gratioloides* A. Cunn. in *Ann. nat. Hist.* 4: 26 (1840).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 757 (1952); Burbidge, *Flor. Aust. Cap. Terr.* fig. 257 (1970).

*Vern.*: Waterwort. *Distr.*: ABCDEJKLMNPWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Cent. Aust., N.Z.

[C. A. Backer in *Flor. males.* 4: 206 (1951) has included this Australasian plant together with the dimerous American species, *E. americana* (Pursh.) Arn., under a very wide circumscription of *E. triandra* Schkuhr, but systematists in Australia prefer a narrower concept of species within the genus *Elatine*—at least until it is more thoroughly investigated on a world basis.]

### BERGIA L. (1771)

*B. ammanioides* Roth Nov. Plant. Spec. 219 (1821).

*Illust.*: Hooker, *Bot. Misc.* 3: 93, suppl. tab. 28 (1833); Niedenzu in Engler, *Natürl. PflFam.* III 6: fig. 130 K-R (1895)—flower; Bailey, *Compr. Cat. Qd Plants* fig. 35 (1913); Baillon, *Hist. Plant.* 9: 219 (1887)—fruit.

*Vern.*: Water-fire. *Distr.*: CN—also W.A., N.S.W., Qd, N. Terr.

[In Ewart's *Flor. Vict.* 774 (1931) the related species, *B. trimera* Fisch. & Mey. in *Linnaea* 10: 74 (1835), is admitted with the comment: "supposed to occur in W. Victoria". Since no collections from the State are known to exist in any Australian herbarium, *B. trimera* has been dropped from this key; it is a smaller, less hairy plant than *B. ammanioides* and may be distinguished by its *tripartite* flowers.]

### Family FRANKENIACEÆ

#### FRANKENIA L. (1753)

1. Leaves quite *sessile*, *hoary* from an indumentum of whitish scales and/or minute white hairs (salt lakes and pans of Mallee)

Leaves contracting at base into a *short but distinct petiole*, glabrous or downy but *without* any scurfy indumentum 2

2. Foliage, calyces and branches densely but *minutely pubescent*; petioles edged with a few stiff white bristles; petals *narrowly spathulate* 7-10 mm. long; floral bracteoles ovate but strongly recurved at edges; ovules 3, on long basally attached funicles (Wimmera & far N.W. Mallee):

*F. angustipetala* Summerhayes in *J. Linn. Soc. (Bot.)* 48: 374 (1930).

*Vern.*: Sea-heath. *Distr.*: AH—also S.A.

—Foliage *glabrous*, at least on upper-surfaces of leaves 3

3. Branches and calyces with a *sparse pubescence of microscopic curved hairs*; leaves *acute*, 3-7 mm. long, the base of petiole prominently ciliate; ovules 6-30, erect on parietal placentas; seeds *several* (frequent undershrub of coastal salt-marshes):

*F. pauciflora* DC. *Prodr.* 1: 350 (1824).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 761 (1952); Black, *Trans. roy. Soc. S. Aust.* 42: t. 17 (1918); *Curtis's bot. Mag.* 56: t. 2896, col. (1829).

*Vern.*: Southern Sea-heath. *Distr.*: BCJKNPTW—also S.A., Tas., N.S.W., N. Terr. (typical form in W.A.).

[Victorian populations have slightly broader, more acute, sometimes minutely pubescent leaves and smoother seeds than in the typical W. Australian form; they have been distinguished as var. *gunnii* Summerhayes in *J. Linn. Soc. (Bot.)* 48: 366 (1930).]

—Branches *densely pubescent with macroscopic hairs*; leaves *bluntish*, 2-5 mm. long; seeds only 1-3 (uncommon plants of far N.W. Mallee) 4

4. Vestiture of *thick decurved-appressed hairs*; petioles not noticeably ciliate; cymes *dense*; calyx *pubescent to summit*; petals *broad*; funicles *attached above middle* of ovary (Raak and Hattah Lakes Nat. Park):

*F. crispa* J. M. Black in *Trans. roy. Soc. S. Aust.* 56: 43, t. 2 fig. 4 (1932).

*Illust.*: Black (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 766 (1952).

*Vern.*: Hoary Sea-heath. *Distr.*: A—also S.A.

—Vestiture of *widely spreading but hooked hairs*; petioles ciliate with white bristles; cymes *loose*; calyx *glabrous in upper half*; petals *narrow*; funicles *attached to base* of ovary (Mildura district where very rare):

*F. sp.* [aff. *F. gracilis* Summerhayes in *J. Linn. Soc. (Bot.)* 48: 380 (1930)].

*Vern.*: Nil. *Distr.*: A.

5. Leaves 3-6 mm. long, with *narrow base*; flowers in *short cymes*; petals *pink*, 7-9 mm. long; stigmas *swollen, oblong*; seeds 9-15, *granular*:

*F. foliosa* J. M. Black in *Trans. roy. Soc. S. Aust.* 42: 177, t. 17 fig. 7-9 (1918).  
*Illust.*: Black (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 762 (1952).  
*Vern.*: Sea-heath. *Distr.*: AG—also S.A.

—Leaves  $\pm$  2 mm. long, with *broad* base; flowers usually *solitary*; petals *white*, 6-7 mm. long; stigmas *terete*; seeds only 1-2, *smooth*:

*F. sessilis* Summerhayes in *J. Linn. Soc. (Bot.)* 48: 353 (1930).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 767 (1952); Black, *Trans. roy. Soc. S. Aust.* 42: t. 17 (1918), as *F. fruticulosa*.  
*Vern.*: Small-leaf Sea-heath. *Distr.*: ABCH—also W.A., S.A.

[The Mediterranean *F. pulverulenta* L., a small prostrate annual, was collected on the Geelong foreshore in 1908, but has not been seen again during the past 60 years. It has *flat obovate* leaf-blades (2-4 mm. long) on distinct petioles, glabrous calyces, bright rosy petals (4-5 mm. long) and 30 or more papillose seeds. The species is regarded as naturalized at Ports Noarlunga and Pirie in S. Aust.

The common Sea Heath of Europe, *F. laevis* L., is occasionally grown here as a rockery or cover plant. It strikes readily from cuttings and forms attractive perennial mats, often brownish or glaucescent. The linear leaves (2-4 mm. long) are glabrous above and densely crowded, the sessile terminal flowers with slightly crenate pink petals.]

### Family VIOLACEÆ

1. Flowers *regular*, *yellowish*,  $\pm$  nodding; fruit a white or bluish *berry* (small tree or divaricate  $\pm$  spiny shrub, often along streams)

*Hymenanthera* (p. 399)

Flowers *irregular* (bilateral), not entirely yellow; fruit a 3-valved *capsule* (herbs or low semishrubs)

2. Lowest petals *twice to several times* the length of the other 4; sepals *not* produced at base; leaves *linear*, with *little or no* petiole

*Hybanthus* (p. 398)

Petals all  $\pm$  *equal* in length; sepals *produced* at base into small appendages; leaves *broad*, petioles *long*

*Viola* (p. 396)

### VIOLA L. (1753)

1. Stipules *large*, leafy, *deeply divided*, green; scapes branched, leafy; leaf-blade oblong, narrowed at base; upper 2 petals usually violet and lower 3 yellow (occasional garden escape, and distributed by cattle in N.E. highlands):

\**V. tricolor* L. *Spec. Plant.* 2: 935 (1735).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 4: t. 17 (1950); Allan, *Bull. Dep. sci. & industr. Res.*, N.Z. 83: fig. 19, in part (1940); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 186 fig. 6 & 7 col., also 5<sup>1</sup>: fig. 2049a, 2054 (1925); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 323, col. (1913).

*Vern.*: Wild Pansy. *Distr.*: NSW—also N.S.W., N.Z.

—Stipules *small, entire*, usually brown; flowers concolorous or bicolorous, *never* wholly or partly yellow 2

2. Plant *tufted*, without elongated scapes or stolons; stipules *adherent* to petiole; leaves erect, blade lanceolate to oblong (to 2" × 1"); flowers pale purplish-blue, 12-20 mm. long, odorless (widespread in damp places, often montane):

**V. betonicifolia** Sm. in Rees *Cyclopædia* 37: sub *Viola* n. 7 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 401, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 97 (1967); Rosser, *Wildflowers Vict.* 23, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 258 (1970); Garnet, *Wildflowers Wilson's Prom. t.*, n. 586 opp. 47 (1971).

*Vern.*: Showy Violet. *Distr.*: DEJNRSTVWZ—also S.A., Tas., N.S.W., Qd, N.G.

—Plant with elongated leafy scapes or stoloniferous and rooting at the nodes (sometimes rhizomic); stipules *free* 3

3. Leaves cordate, with exceedingly *deep and broad sinus*, the apex pointed, tufted at the base but *singly* along the elongated and often branched scapes; flowers white (along streams in E. Gippsland and far N.E.):

**V. caleyana** G. Don *Gen. Syst.* 1: 329 (1831).

*Vern.*: Swamp Violet. *Distr.*: VWZ—also Tas., N.S.W., A.C.T.

—Leaves rounded or ± reniform, with a *shallow or narrow sinus*, in *tufts* on the rhizomes or stolons; scapes *leafless*, never elongated 4

4. Plants thickly *rhizomic*; leaf-blades 1-2" long, *penni-veined*, visibly *pubescent*, the margin *crenulate*; flowers violet or white, *scented*; often reproducing by small, cleistogamous, apetalous flowers (occasional garden escape):

**\*V. odorata** L. *Spec. Plant.* 2: 934 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 4: t. 7 (1950); Hegi, *Ill. Flor. Mittel-Eur.* 5: t. 185 fig. 3, col. (1925); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 2: fig. 313, col. (1913); Perrin, *Brit. flowering Plants* 3: t. 174, col. (1914); Coste, *Flor. Franc.* 1: fig. 383 (1901).

*Vern.*: Common Violet. *Distr.*: PRTW—also S.A., N.S.W.

—Plants *stoloniferous*, leaf-blades <1" long, *flabellately veined*, *glabrous* or almost so; normal flowers fertile, usually *odourless* (very widespread herbs in cooler places) 5

5. Leaf-blades 1.5-3 cm. wide, *wider than long*, mostly reniform; sepals usually 5 mm. long or more; petals much longer (± 8-10 mm.), usually white-and-purple, the lateral ones *pubescent* inside towards the base:

**V. hederacea** Labill. *Nov. Holl. Plant. Specim.* 1: 66, t. 91 (1805).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 433, col. (1968); Ewart, *Flor. Vict.* fig. 292 (1931); Black, *Flor. S. Aust.* ed. 2: fig. 774 (1952); Everard, *Wild Flowers World* t. 135 fig. B, col. (1970); Forster in Harris, *Wild Flowers Aust.* t. 65, col. (1947).



*Vern.*: Ivy-leaf Violet. *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, Malaya.

—Leaf-blades <1.5 cm. wide, *longer than wide*, rhomboid to nearly spathulate; sepals usually 3 mm. long or less; petals not much longer, usually pale (but dark purple in alps), all *glabrous* inside:

*V. sieberana* Spreng. *Syst. Veg.* 4<sup>2</sup>: 96 (1827).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 775 (1952); Rodway, *Pap. Proc. roy. Soc. Tasm.* 1893: t. 2 fig. 1-7 inter pp. 184 & 185 (1894).

*Vern.*: Tiny Violet. *Distr.*: DEJKNPRTVWZ—also S.A., Tas., N.S.W.

[The boundaries between *V. sieberana* and the quite variable *V. hederacea* are by no means always clear-cut; indeed, in *Blumea* 11<sup>1</sup>: 535 (1962) D. M. Moore, while discussing the isolated occurrence of the latter species on the 6600-foot summit of Batu Brinchang, Pahang (Malaya), remarked that it appeared to “grade rather confusedly into *V. sieberana*”. A complete range of intermediate states has been observed along the upper Delegate River (far E. Vic.) and on Kangaroo Id (S.A.).]

#### HYBANTHUS N. J. Jacq. (1760)

1. Inflorescence a *bracteate cyme* of 1 to several flowers, not or hardly exceeding the leaves; lowest petal <1 cm. long, *scarcely twice* the length of other four, all *pale greyish-blue*; leaves 1-3 cm. long, linear-lanceolate, with small recurved mucro (undershrub to 2 ft. in N.W. and Mallee districts):

*H. floribundus* (Lindl.) F. Muell. *Native Plants Vict.* 1: 45 (1879).

*Pigea floribunda* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 164 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 181, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 777 (1952); *Your Garden* 13<sup>10</sup>: 19, col. (Oct. 1960); Mueller, *Key Syst. Vict. Plants* 2: fig. 9 (1886).

*Vern.*: Shrub Violet. *Distr.*: ABCDFHJM—also W.A., S.A., N.S.W.

—Inflorescence a *raceme*; lowest petal >1 cm. long, *several times* the length of other four, *bright blue* (slender herbs of far E. Gippsland) 2

2. Peduncles *far exceeding* the foliage, with a leafless raceme of 2 or more flowers; leaves 1-2" long, narrow-linear, the upper ones *opposite* (chiefly montane):

*H. monopetalus* (Roem. & Schult.) Domin in *Bibl. bot., Stuttgart* 22 (Hef 89): 984 (1928).

*Ionidium monopetalum* Roem. & Schult. *Syst. Veg.* 5: 400 (1819);

*H. filiformis* (DC.) F. Muell. *Native Plants Vict.* 1: 44 (1879);

*Pigea filiformis* DC. *Prodr.* 1: 307 (1824).

*Illust.*: Scarth-Johnson, *Wildflowers N.S.W.* 69, col. (1968); Sulman, *Aust. Wild Flowers* ser. 2: t. 55 (1913), as *Ionidium filiforme*; Everard, *Wild Flowers World*

t. 135 fig. A, col. (1970); Nodder in Banks & Solander, *Ill. Bot. Cook's Voy. 1*: t. 9 (1900), as *Calceolaria filiformis*.

*Vern.*: Slender Violet-bush. *Distr.*: SVWZ—also N.S.W., Qd.

—Peduncles *shorter than leaves*; flowers *solitary* in the upper axils, making a terminal leafy raceme; leaves usually <1" long, linear to narrowly lanceolate, all *alternate* (coastal heaths and damp flats):

*H. vernonii* (F. Muell.) F. Muell. *Native Plants Vict. 1*: 45 (1879).

*Ionidium vernonii* F. Muell. *Plants indig. Colon. Vict. 1*: 223 (1862).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 466, col. (1968).

*Vern.*: Erect Violet. *Distr.*: SWZ—also N.S.W.

### HYMENANTHERA R. Br. (1818)

*H. dentata* R. Br. ex DC. *Prodr. 1*: 315 (1824)

var. *angustifolia* (R. Br. ex DC.) Benth. *Flor. aust. 1*: 105 (1863).

*H. angustifolia* R. Br. ex DC. *Prodr. 1*: 315 (1824).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 237, col. (1968); Salmon, *Field Guide Alpine Plants N.Z.* t. 184, col. (1968), as *H. angustifolia*; Hooker in *Curtis's bot. Mag.* 59: t. 3163, col. (1832), as *H. dentata*; Black, *Flor. S. Aust.* ed. 2: fig. 780 (1952), as *H. angustifolia*; Ewart, *Handb. For. Trees* t. 114 (1925), as *H. dentata*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 259 (1970), as *H. dentata*.

*Vern.*: Tree Violet. *Distr.*: DEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

### Family PASSIFLORACEÆ

PASSIFLORA L. (1753)

*P. cinnabarina* Lindl. in *Gdnrs' Chron.* 1855: 724 (1855).

*Illust.*: *Curtis's bot. Mag.* 97: t. 5911, col. (1871); Reeves in Barrett, *Aust. Wild-flower Book* t. opp. 77 (1942); Reeves, *Wild Life (Melb.) 5*: 60 (1943).

*Vern.*: Red Passion-flower. *Distr.*: VWZ—also N.S.W.

[The introduced Brazilian *P. cærulea* L. (Blue Passion-flower) is a hardy vine, grown for its relatively large spectacular blooms and escaping occasionally from Victorian gardens. The compound leaves consist of 5 digitate leaflets and are paler on the under-side, the flowers have a widely fringed corona banded in blue white and purple, while the golden fruits are dryish inside and inedible. This plant has been much used as a stock on which to graft commercial passion-vines, e.g. *P. edulis* Sims (the common, delectable, black-fruited species).]

### Family \*CACTACEÆ

\*OPUNTIA Mill. (1754)

Ultimate height 5-15 ft.; areoles of the succulent, flattened,  $\pm$  *glossy* branches ("articles") each with 1 or 2 *long spines*; petals yellow,  $\pm$  *streaked with red*

on back; fruit 6-7 cm. long, *greenish* with red tints toward summit, the pulp *whitish*; seeds *few* (neighbourhood of Melbourne, also Bairnsdale):

\**O. vulgaris* Mill. *Gdnrs' Dict.* ed. 8 n. 1 (1768).

*O. monacantha* (Willd., ut *Cactus* sp.) Haw. *Synops. Plant. Succul.* 81 (1812).

*Illust.*: Backeberg, *Cactaceæ* 1: fig. 405-408 (1958); Black, *Flor. S. Aust.* ed. 2: fig. 496 (1948), as *O. monacantha*; *Curtis's bot. Mag.* 68: t. 3911, col. (1841), as *O. monacantha*; Maiden, *Agric. Gaz. N.S.W.* 28: t. opp. 652, col. (1917); Rol in van Laren, *Cactus* 3, col. (1935).

*Vern.*: Drooping Prickly-pear. *Distr.*: NW—also S.A.

Ultimate height <5 ft.; areoles *spineless* or nearly so; branches *dull*; petals lemon-yellow, *greenish* on back; fruit 4-6 cm. long, *purple* at maturity, the pulp *crimson*; seeds *numerous* (Eldorado near Beechworth, also Castlemaine district, Wimmera R. near Antwerp and Red Cliffs in far N.W.):

\**O. stricta* Haw. *Synops. Plant. Succul.* 191 (1812).

*O. inermis* (DC., ut *Cactus opuntia* var.) DC. *Prodr.* 3: 473 (1828).

*Illust.*: Backeberg, *Cactaceæ* 1: fig. 479 (1958); Maiden, *Agric. Gaz. N.S.W.* 9: t. opp. 1005 (1898); Alexander, *Proc. roy. Soc. Qd* 38: t. 8 opp. 54 (1927)—habit.

*Vern.*: Common Prickly-pear. *Distr.*: ACNR—also S.A., N.S.W., Qd.

[Several other species of *Opuntia* ("prickly pears") have been found to persist, and even spread a little by seceding branchlets, on old garden sites in various parts of Victoria; but they are never likely to create a serious problem as in Queensland and northern New South Wales. A species once widely grown here is the so-called Indian Fig, *O. ficus-indica* (L.) Mill. of tropical America—a tall robust plant distinguishable from *O. stricta* by its more spiny shoots, larger articles (12-20" long), numerous yellow glochids and larger (3-4" long) *orange* fruits with numerous areoles. The Mexican "Camuesa" (or "Wheel Pear"), *O. robusta* Wendl., occurs in parts of the Wimmera, the Whipstick Scrub near Bendigo, and was noted in isolated patches on a property in Maldon Shire, about 6 miles S.W. of Castlemaine, June 1960; articles of this species are very large, round and bluish, areoles with several pale spines, yellow flowers 2" wide and large globular fruits deep red. Peruvian *O. cylindrica* DC. (to 10 ft. high) has very spiny, divaricate, cylindrical branches, small rosy flowers and yellowish fruits; isolated plants appear occasionally and are difficult to eradicate when once established.]

### Family THYMELÆACEÆ

Flowers usually in *terminal heads*; stamens 2, inserted near summit of floral tube *Pimelea* (p. 400)

Flowers forming a long *slender leafy spike*; stamens 8, inserted in 2 rows in floral tube (annual of N.W. Mallee) \**Thymelæa* (p. 406)

PIMELEA Banks & Soland. ex J. Gært. (1788)

1. Leaves all *opposite*

Leaves all or mostly *alternate*

8

2

2. Flowers in *heads* that never elongate 4  
Flowers in *elongating spikes*; bracts similar to leaves (plants of N.W.  
Mallee) 3
3. Stems and leaves densely *silky-pubescent*; leaf *oblong-lanceolate*;  
anther-connective *broad*; seed *smooth* (dwarf shrubby *perennial*):

*P. williamsonii* J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 37, t. 6 (1919).

*Illust.*: Black (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 787 (1952).

*Vern.*: Williamson's Rice-flower. *Distr.*: AB—also S.A.

—Stems and leaves *glabrous* or nearly so; leaf *linear*, to 15 mm. long;  
anther-connective *narrow*; seed finely *striated* (erect slender *annual*):

*P. trichostachya* Lindl. in *Mitch. J. Exped. trop. Aust.* 355 (1848).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 786 (1952); Chippendale, *Poison Plants N.  
Terr.* Ext. Art. n. 2 pt III: t. 24 (1960).

*Vern.*: Annual Rice-flower. *Distr.*: ABCFG—also W.A., S.A., N.S.W., Qd.

4. Leaves *glabrous* or sparsely hairy (as with stems), *linear-oblong*; heads  
terminal; involucre bracts 3-4, *deciduous*; flowers *white*, *shortly  
tomentose*, 3-4 mm. long; anther-connective *narrow* (erect slender  
*annual* of far N.W. Mallee):

*P. simplex* F. Muell. in *Linnæa* 25: 443 (1853).

*Vern.*: Desert Rice-flower. *Distr.*: A—also S.A., N.S.W., Qd.

—Leaves *pubescent*, at least on under-side; *oblong to oblanceolate*; heads  
terminal or lateral; involucre bracts 4-8, *persistent*; flowers *yellowish*,  
*silky-hirsute*; anther-connective *broad* (*perennials*) 5

5. Flowers 3-4 mm. long, *scarcely exceeding* the 4-6 silky bracts; seeds  
finely *striated* (low silky undershrub of Mallee and drier parts):

*P. micrantha* F. Muell. ex Meissn. in *Linnæa* 26: 351 (1854).

*P. curviflora* R. Br. var. *micrantha* (F. Muell. ex Meissn.) Benth.  
*Flor. aust.* 6: 32 (1873).

*Vern.*: Silky Rice-flower. *Distr.*: CG—also S.A., N.S.W.

—Flowers 6-14 mm. long, *obviously longer* than bracts; seeds *smooth* 6

6. Bracts 4, unequal; flowers often *curved*, in lateral clusters as well as  
terminal heads; leaves *spreading*, usually *glabrous* on upper side, the  
midrib *not prominent* beneath (very widespread):

*P. curviflora* R. Br. *Prodr. Flor. Nov. Holl.* 362 (1810).

*Illust.*: Lee, *Wild Life (Melb.)* 15: 219 (1952); Rudge, *Trans. Linn. Soc., Lond.* 10:  
t. 13 (1811).

*Vern.*: Curved Rice-flower. *Distr.*: BCDEHJMNPRSTVWXZ—also S.A., Tas.,  
N.S.W., Qd.

[*P. curviflora* is quite variable in stature, hairiness, leaf-size and calyx-length,  
and there is no sharp line of demarcation between this species and the smaller-

flowered *P. micrantha*. By plotting leaf-length against calyx-length for a wide range of populations of both species, the result is almost a straight diagonal line, with *P. micrantha* at the bottom and a Tasmanian form of *P. curviflora* near the top.]

—Bracts >4; flowers *straight*, strictly terminal; leaves *erect, appressed, villous* on both surfaces, the midrib *prominent* underneath (Cent. & West. areas) 7

7. Leaves 8-15 mm. long, *densely* silky-villous; heads  $\pm$  *nodding*; involucre bracts about 8, *no wider* than upper leaves; flowers scented, 8-14 mm. long, creamy yellow, *downy-silky all over*:

***P. octophylla*** R. Br. *Prodr. Flor. Nov. Holl.* 361 (1810).

*Illust.*: Rosser, *Wildflowers Vict.* 101, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 789 (1952); Galbraith, *Wildflowers Vict.* ed. 3: t. 104 (1967); Barrett, *Aust. Wildflower Book* t. opp. 76 (1942); Anon., *Wild Life (Melb.)* 3: 398 (1941); Lee, *ibid.* 15: 215 (1952).

*Vern.*: Woolly Rice-flower. *Distr.*: BCDEJKNPS—also S.A., N.S.W.

—Leaves 3-6 mm. long, slightly denticulate, *sparsely* villous; heads erect; involucre bracts 5-6, *broader than* leaves, ciliate; flowers 6-7 mm. long *glabrous at base*:

***P. phyllicoides*** Meissn. in Lehm. *Plant. Preiss.* 2: 271 (1848).

*Illust.*: Lee, *Wild Life (Melb.)* 15: 216 (1952); Garnet, *Wildflowers Wilson's Prom.* fig. 596 (1971).

*Vern.*: Heath Rice-flower. *Distr.*: BCDEJKNPT—also S.A., N.S.W.

8. Flowers *only* 2, terminal, *reddish*, within 4 broader leaves, the lower pair subtending 2 vegetative shoots which later elongate; leaves ovate, pubescent on under-surfaces, <1 cm. long (prostrate plant of alps and subalps):

***P. biflora*** N. A. Wakefield in *Vict. Nat.* 73: 212 (1957).

*P. curviflora* R. Br. var. *alpina* F. Muell. ex Benth. *Flor. aust.* 6: 32 (1873).

*Vern.*: Matted Rice-flower. *Distr.*: VW—also N.S.W.

—Flowers *several or many* together 9

9. Inflorescence of sessile *axillary* flower-clusters with 2-4 small papery involucre bracts; flowers unisexual, usually slightly silky; leaves glabrous, narrow-lanceolate, 1-2" long or more in the lowlands, but shorter (<15 mm. long) and broader in the reduced alpine variant (widespread mountain shrub, often 5-10 ft. high):

***P. axiflora*** F. Muell. ex Meissn. in *Linnæa* 26: 345 (1854).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 455, col. (1968); Ewart, *Flor. Vict.* fig. 293 (1931); Rossiter in Ewart, *Handb. For. Trees* t. 115 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 74 (1886).

*Vern.*: Bootlace Bush (Tough Rice-flower). *Distr.*: DHJKMNPRSTVWZ—also Tas. (Bass Strait), N.S.W.

[The var. *alpina* F. Muell. ex Benth. *Flor. aust.* 6: 26 (1873), smaller in all its parts and with thickish ovate leaves, is abundant in alpine tracts of the eastern highlands.]

- Inflorescence quite *terminal*, although sometimes on very short lateral branchlets or some in the forks of twinned branchlets 10
- 10. At least the perianth *pubescent* 12
- Whole plant, including inflorescence, quite *glabrous* (few-flowered dioecious shrubs) 11
- 11. Leaves *linear-lanceolate*, 5-15 mm. long, *acute*; bracts usually 4, *shorter and broader* than leaves (tall shrub along mountain streams of Cent. & E., the fruit succulent):

*P. pauciflora* R. Br. *Prodr. Flor. Nov. Holl.* 360 (1810).

*Illust.*: Mercer in Hurst, *Poison Plants N.S.W.* 290 (1942); Hope in Bailey & Gordon, *Plants poison. & injur. to Stock* t. opp. 71 (1887); Gilg in Engler, *Natürl. Pflfam.* III 6A: fig. 84 A-B (1894); Loddiges, *Bot. Cabinet* 2: t. 179 (1818).

*Vern.*: Poison Rice-flower. *Distr.*: NSV—also Tas., N.S.W., Qd.

- Leaves  $\pm$  *oblong*, 4-6 mm. long, *blunt*; bracts 4, *similar* to the leaves; flowers minute, yellow (lowland plains and coastal dunes, sometimes  $\pm$  spiny):

*P. serpyllifolia* R. Br. *Prodr. Flor. Nov. Holl.* 360 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 785 (1952); Lee, *Wild Life (Melb.)* 15: 216, 218 (1952).

*Vern.*: Thyme Rice-flower. *Distr.*: BCDEJNPT—also W.A., S.A., Tas. (Bass Strait Is.), N.S.W.

- 12. Flower-heads mostly on very short lateral branchlets (appearing *axillary*); involucre bracts 2, small *pubescent*; leaves lanceolate, 2-4 cm. long,  $\pm$  *pubescent* beneath; fruit a reddish-black *succulent* drupe 7-9 mm. long (taller shrub of Wilson Promontory):

*P. drupacea* Labill. *Nov. Holl. Plant. Specim.* 1: 10, t. 7 (1804).

*Illust.*: Labillardière (*l.c.*); Loddiges, *Bot. Cabinet* 6: t. 540 (1821); Garnet, *Wild-flowers Wilson's Prom.* fig. 591 (1971).

*Vern.*: Cherry Rice-flower. *Distr.*: T—also Tas.

- Flower-heads obviously *terminal*; leaves wholly *glabrous*; fruit dry 13
- 13. Involucre bracts  $\pm$  8, *narrower* than the upper leaves, at least 3 times as long as wide, *pubescent* on inner surfaces and margins; leaves linear-lanceolate, 1.5-4 cm. long (small shrub,  $\pm$  1 ft. high, in far N.E.):

*P. treyvaudii* F. Muell. ex Ewart & B. Rees in *Proc. roy. Soc. Vict.* new ser. 24: 261, t. 54 (1912).

*Illust.*: Ewart & Rees (*i.c.*).

*Vern.*: Grey Rice-flower. *Distr.*: V—also N.S.W., A.C.T.

—Involucral bracts usually 4 (rarely more), often *broader* than the upper leaves and sometimes <twice as long as wide 14

14. Upper branchlets and peduncles *glabrous* 18

Upper branchlets and peduncles *pubescent* 15

15. Stems erect, *not or little branched*; leaves flat, obovate-oblongate, obtuse,  $\pm$  1 cm. long; bracts usually 4, larger than the leaves, *pubescent* along midrib on the inner surfaces (very widespread dwarf shrub, rarely 1 ft. high):

*P. humilis* R. Br. *Prodr. Flor. Nov. Holl.* 361 (1810).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 75, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 103 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 781 A (1952); Lee, *Wild Life (Melb.)* 15: 212 & 213 (1952); Edwards's *bot. Reg.* 15: t. 1268, col. (1829); Garnet, *Wildflowers Wilson's Prom. t.*, n. 593 opp. 143 (1971).

*Vern.*: Common Rice-flower. *Distr.*: CDEHJKMNPSTVWXZ—also S.A., Tas., N.S.W.

—Stems *dichotomously branching*; bracts 4, *glabrous* on both faces, the outer pair subtending vegetative buds which later grow out into new branches 16

16. Leaves *narrow-elliptical*, the margins *recurved*; involucral bracts *similar* to the leaves; perianth-tube 2 mm. long or less (slender  $\pm$  yellowish shrub of rocky places in W.):

*P. hewardiana* Meissn. in *Linnæa* 26: 346 (1854).

*P. elachantha* (Meissn., ut *P. hewardiana* var.) F. Muell. *Fragm. Phyt. Aust.* 7: 6 (1869).

*Vern.*: Forked Rice-flower. *Distr.*: CDENP—also ?S.A.

—Leaves  $\pm$  *round, flat*; involucral bracts sometimes *twice as wide* as leaves; perianth-tube 3-4 mm. long 17

17. Leaves *narrowly obovate*, 5-10 mm. long,  $\pm$  *membranous*, the lateral venation usually *visible*; flowers always *yellow*; bracts manifestly *longer and broader* than stem leaves (taller shrubs of cool moist areas in Cent. & W. forest-land):

*P. flava* R. Br. *Prodr. Flor. Nov. Holl.* 361 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 58, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 102 (1967).

*Vern.*: Yellow Rice-flower. *Distr.*: DEJKNPSTW—also ?W A., S.A., Tas., ?N.S.W., Qd.

—Leaves *broadly obovate* to  $\pm$  *orbicular*, 3-7 mm. long, *leathery*, wrinkled when dry, the lateral venation *indistinct*; flowers *pink or white*, rarely yellowish; bracts *hardly differing* from leaves (Mallee areas of N.W.):

**P. dichotoma** Schlechtendal in *Linnæa* 20: 581 (1847).

*P. flava* R. Br. var. *diosmifolia* Meissn. in *Bot. Zeit.* 1848: 396 (1848).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 784 (1952).

*Vern.*: Diosma Rice-flower. *Distr.*: ABCFGH—also W.A., S.A.

18. Involucral bracts broadly ovate, acute, keeled, the outer pair quite *glabrous* but inner pair *long-ciliate* on margins; leaves broadly lanceolate, acute and *mucronate*, to 1 cm. long or more (very wide-spread floriferous shrub to 2 ft. high):

**P. glauca** R. Br. *Prodr. Flor. Nov. Holl.* 360 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 781 B-G (1952); Lee, *Wild Life (Melb.)* 12: 200 (1950); Lee, *ibid.* 15: 220 (1952); Rudge, *Trans. Linn. Soc., Lond.* 10: t. 13 (1811); Loddiges, *Bot. Cabinet* 17: t. 1611 (1830).

*Vern.*: Smooth Rice-flower. *Distr.*: BCDEHJKLMNPRTVWZ—also S.A., Tas., N.S.W., Qd.

—Involucral bracts *all similar* (either glabrous or hairy); leaves *not mucronate* 19

19. Leaves ovate to elliptical, 1-2" long, thin, prominently *penni-nerved*; flower heads *globular*, on long and *often recurved* peduncles; bracts 4-8, broadly ovate, usually pubescent on the inside and margins; anthers manifestly *exserted* (forest shrubs 3-6 ft. tall, but shorter in alpine localities):

**P. ligustrina** Labill. *Nov. Holl. Plant. Specim.* 1: 9, t. 3 (1804).

*Illust.*: Labillardière (*l.c.*); Rosser, *Wildflowers Vict.* 85, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 782 (1952); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 5, col. (1962); Wood, *Aust. Plants* 3<sup>4</sup>: 149, col. (1965); Mass, *Flowers aust. Alps* 39 (1967).

*Vern.*: Tall Rice-flower. *Distr.*: DEHKMNIRSTVWZ—also S.A., Tas., N.S.W., Qd.

—Leaves either <1" long or with lateral venation not apparent; bracts 4 (rarely only 2). 20

20. Bracts *villose* over the whole inner surfaces, broadly ovate; leaves linear-lanceolate, 1-2 cm. long; perianth-lobes often pink (slender lowland shrubs 2-3 ft. high, extending to Mallee):

**P. stricta** Meissn. in *Linnæa* 26: 348 (1854).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 781 H (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 254 (1965).

*Vern.*: Gaunt Rice-flower. *Distr.*: BCDGMNV—also S.A., Tas., N.S.W.

—Bracts *glabrous* or almost so 21

21. Plant *prostrate* or low and spreading; leaves *crowded*, oblong, *very obtuse*,  $\pm$  1 cm. long or less, the mid-vein *hardly apparent*; bracts *oblong* and blunt like the leaves; flower-heads sessile among upper leaves; flowers *rosy-pink* (alpine tracts):



*P. alpina* F. Muell. ex Meissn. in *DC. Prodr.* 14: 511 (1857).

*Illust.*: Leithhead, *Wild Life* (Melb.) 13: 464 (1951); Morcombe, *Aust. Wildflowers* t. on [24], col. (1970).

*Vern.*: Alpine Rice-flower. *Distr.*: RSVW—also N.S.W.

—Plants *erect*; leaves *scattered*,  $\pm$  *acute*, the mid-vein *conspicuous*; bracts *ovate*, short and broad, rather pointed (lowland to montane) 22

22. Flowers *appressedly hirsute*, *bisexual*, 8-12 mm. long, in large often nodding heads; leaves *linear-oblong* to obovate, 1-2 cm. long; bracts always 4, green to crimson, sometimes *slightly pubescent* on base and midrib of inner surface (very widespread variable shrub to 4 ft. high):

*P. linifolia* Sm. *Specim. Bot. New Holl.* 31, t. 11 (1793).

*P. spathulata* Labill. *Nov. Holl. Plant. Specim.* 1: 9, t. 4 (1804);

*P. collina* R. Br. *Prodr. Flor. Nov. Holl.* 359 (1810);

*P. involucrata* Banks & Soland. ex Ewart *Flor. Vict.* 787 (1931).

*Illust.*: Labillardière (l.c.); Smith (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 320, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 783 (1952), as *P. spathulata*; Curtis's bot. Mag. 23: t. 891, col. (1805); Scarth-Johnson, *Wildflowers Warm East Coast* 67, col. (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 260 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 595 (1971), also fig. 590 (1971) as *P. collina*.

*Vern.*: Slender Rice-flower. *Distr.*: CDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Flowers *shortly pubescent*, *unisexual*, 4-5 mm. long, in small heads; leaves *narrow-linear*, 1-3 cm. long; bracts 2-4, *quite glabrous* (divaricate shrub of N.W. Mallee, often to 6 ft. high near lakes or water-courses):

*P. microcephala* R. Br. *Prodr. Flor. Nov. Holl.* 361 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 781 i-j (1952)—seed & fruit; Rossiter in Ewart, *Handb. For. Trees* t. 116 (1925).

*Vern.*: Mallee Rice-flower. *Distr.*: ABCFG—also W.A., S.A., N.S.W., Qd., N. Terr., Cent. Aust.

[The annual Mediterranean *Thymelæa passerina* (L.) Lange, on record as naturalized near Strathalbyn, S.A., appeared also at Goongee near Murrayville, N.W. Vic., in Jan. 1955. The occurrence covered about  $\frac{1}{4}$  acre, but it is not known whether this introduced herb has persisted there or spread to other properties. *Thymelæa* is 10-20" tall, with slender, erect, broom-like, glabrous branches, lanceolate leaves ( $\pm$  10 mm. long) passing above into small appressed bracts and very small 8-staminate flowers that are sessile in pairs in the upper axils, forming long leafy spikes. South African *Passerina vulgaris* Thod., a small ericoid shrub with erect, crowded, terete, glabrous leaves (5-10 mm. long) and glabrous flowers in dense terminal spikes, was collected on Coode Id (Yarra R. mouth) in Oct. 1908; but, as with so many other alien plants appearing on this dockside area, it failed to propagate.]

#### Family MYRTACEÆ

- |  |   |
|--|---|
| 1. Leaves $<1\frac{1}{2}$ " (4 cm.) long     | 6 |
| Leaves $1\frac{1}{2}$ " (4 cm.) long or more | 2 |

2. Fruit a *berry* (white to rosy-purple); leaves opposite, penniveined; flowers many, in panicles (E. Gippsland tree) *Eugenia* (p. 408)  
Fruit usually dry and often woody, *capsular or nut-like*, if ever berry-like then the leaves alternate 3
3. Flowers in intercalary spikes ("bottle-brushes"); stamens colourful, >twice the length of petals, free; capsules sheathing the branches and remaining for many years; leaves alternate *Callistemon* (p. 450)  
Flowers in panicles, racemes or clusters, sometimes solitary 4
4. Buds of flowers *covered by a deciduous operculum* (consisting either of the fused sepals and petals, or fused sepals only when petals are absent); flowers mostly in axillary umbels, and adult leaves usually alternate ("gum-trees") *Eucalyptus* (p. 408)  
Buds of flowers *covered by sepals* which are at length free (trees of E. Gippsland) 5
5. Stamens *free*, very numerous; adult leaves *opposite*; capsule distinctly *ribbed* (flowers paniculate; bark rough) *Angophora* (p. 408)  
Stamens *united in 5 bundles* opposite the yellow petals; adult leaves *alternate*; capsule smooth and *ribless* (bark smooth) *Tristania* (p. 408)
6. Fruit very small (<3 mm. wide), *indehiscent and nut-like*, with only 1 or 2 seeds (ericoid shrubs with narrow leaves <1 cm. long) 11  
Fruit *opening by valves* (often radial slits at the top) 7
7. Calyx-lobes *persisting on the matured fruit*; flowers in leafy spikes or head-like clusters; stamens long, numerous, free *Kunzea* (p. 449)  
Calyx-lobes *deciduous* before fruit matures or, if ever persisting, then flowers never in spikes or heads 8
8. Stamens often *shorter than* the obvious white or coloured petals 10  
Stamens much *longer than* the usually inconspicuous petals (flowers in spikes or heads) 9
9. Filaments *united* (at least toward their bases) into 5 bundles opposite the petals, usually <1 cm. long *Melaleuca* (p. 452)  
Filaments entirely *free*, usually >1 cm. long; leaves never opposite ("bottle-brushes") *Callistemon* (p. 450)
10. Leaves *alternate*; stamens *numerous* *Leptospermum* (p. 444)  
Leaves *opposite*; stamens 5-15 *Bæckea* (p. 455)
11. Style *bearded* below the stigma, long and exserted; flowers in small *corymbose heads*; stamens 10 (very rare, delicate wiry undershrubs of S.W. Mallee & near-coastal E. Gippsland) *Darwinia* (p. 460)  
Style *glabrous*, often short and enclosed 12
12. Stamens 20-30; ovary occupying almost the *whole* of thalamus ("calyx-tube"); sepals often ending in an *awn-like point* or bristle *Calytrix* [incl. *Lhotskya*] (p. 458)  
Stamens 5 or 10; ovary restricted to *upper half* of thalamus; sepals never awned 13
13. Leaves >5 mm. long, *flat* or nearly so, *glabrous*; sepals *non-ciliolate* (tall shrubs) *Thryptomene* (p. 459)  
Leaves <4 mm. long, *trigonus*, minutely *ciliolate*; sepals also ciliolate *Micromyrtus* (p. 459)

## EUGENIA L. (1753)

*E. smithii* Poir. in *Encycl. méth. Bot. Suppl.* 3: 126 (1813).

*Acmena smithii* (Poir.) Merr. & Perry in *J. Arnold Arbor.* 19: 16 (1938).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 462, col. (1968), as *Acmena smithii*; Ewart, *Flor. Vict.* t. 295, col. (1931); Rossiter in Ewart, *Handb. For. Trees* t. 119 (1925); Maiden, *For. Flor. N.S.W.* 7: t. 264 (1922); Anon., *Wild Life (Melb.)* 5: 408 (1943); Rosser, *Wildflowers Vict.* 79, col. (1968).

*Vern.*: Lilly-pilly. *Distr.*: STWZ—also N.S.W., Qd, N. Terr.

[Some authorities, preferring a narrower circumscription, have applied the generic name *Acmena* to this population; but typification of the latter name is still open to question, and *Eugenia* (sens. lat.) is certainly much more firmly entrenched in botanical literature.]

## TRISTANIA R. Br. in Ait. (1812)

*T. laurina* R. Br. in Ait. *Hort. kew.* ed. 2, 4: 417 (1812).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 487, col. (1968); Galbraith, *Wildflowers Vict.* t. 108 (1950); Maiden, *For. Flor. N.S.W.* 7: t. 262 (1921); Rossiter in Ewart, *Handb. For. Trees* t. 118 (1925); *Curtis's bot. Mag.* 123: t. 7529, col. (1897).

*Vern.*: Kanooka or Water Gum. *Distr.*: SWZ—also N.S.W., Qd.

## ANGOPHORA Cav. (1797)

*A. floribunda* (Sm.) Sweet *Hort. Brit.* ed. 2: 209 (1830).

*Metrosideros floribunda* Sm. in *Trans. Linn. Soc. Lond.* 3: 267 (1797);

*A. intermedia* DC. *Prodr.* 3: 222 (1828).

*Illust.*: *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 191 (1957); Maiden, *For. Flor. N.S.W.* 8: t. 268 (1925); Ewart, *Handb. For. Trees* t. 120 (1925)—all as *A. intermedia*.

*Vern.*: Rough-barked Apple (Gum Myrtle, Boondah—aborig.). *Distr.*: Z—also N.S.W., Qd.

## EUCALYPTUS L'Hérit. (1788-89)

[In *Nature* 196 n. 4858: 969-72 (Dec. 1962), Stella G. M. and D. J. Carr advance reasons for restricting the name *Eucalyptus* to those species in which the operculum is developed from a single perianth-whorl and the seed-coat consists of two integuments (i.e. the traditional sections *Renantheræ* and *Renantheroideæ*). For all other eucalypts they propose the generic name *Symphyomyrtus* Schauer (1845). Whatever the taxonomic justification for such a cleavage, adoption of *Symphyomyrtus* would involve most species and require hundreds of new nomenclatural combinations—a procedure currently unthinkable to the great majority of responsible systematists. More recently, L. D. Pryor and L. S. Johnson have published *A Classification of the Euca-*

*lypts* (1971) in which seven subgenera are proposed, viz. *Blakella*, *Corymbia*, *Eudesmia*, *Gaubaea*, *Idiogenes*, *Monocalyptus* (= *Eucalyptus* sens. strict.) and *Symphomyrtus*; the vast majority of species still fall under the last subgenus.

Lengths of leaf and fruit do *not* include those of petiole and pedicel respectively; dimensions of flower-bud apply only to *mature* examples, and widths of fruit refer to the *broadest* part of a capsule in the following key.]

1. Secondary veins of leaf *not* simultaneously numerous, parallel, very close-set and  $\pm$  transverse (if occasionally numerous and almost perpendicular to mid-rib, then  $>1$  mm. apart) 3  
 Secondary veins of leaf *very numerous, parallel, close-set* (1-4 per mm.), almost perpendicular to the mid-rib (large trees of *E. Gippsland*) 2
2. Flowers in axillary *umbels*, opening *Jan.-March*; fruit  $<10$  mm. long, *barrel-shaped*, hardly or not contracted at apex, the valves slightly enclosed or level with rim (bark thick, *hard, subfibrous*, persisting on trunk and often on main branches; leaves *paler* beneath):

*E. botryoides* Sm. in *Trans. Linn. Soc. Lond.* 3: 286 (1797).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 64 (1968); Kelly, *Eucalypts* t. 29, col. (1969); Costermans, *Trees Vict.* 58 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 98 fig. 10-12 & t. 99 fig. 1-4, 5 c, 6-9 (1915); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 66 (1949); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 65 (1957); Ewart, *Handb. For. Trees* t. 124 (1925).

*Vern.*: Southern Mahogany (Bangalay—N.S.W.). *Distr.*: TWZ—also N.S.W.

[The species hybridizes with *E. pseudoglobulus* in far E. Gippsland, one of these hybrid populations being *E. maidenii* var. *williamsonii* Blakely, described in *Key Eucal.* 165 (1934).]

—Flowers in axillary *panicles* or terminal *corymbs*, opening *July-Sept.*; operculum manifestly *double*, each lid usually falling separately; fruit 10-15 mm. long, ovoid to *slightly urceolate*, the valves deeply enclosed (bark *smooth and whitish throughout*, deciduous in large patches; leaves *equally coloured* on both surfaces; Mt. Tara area):

*E. maculata* Hook. *Icon. Plant.* 7: t. 619 (1844).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 54 (1968); Kelly, *Eucalypts* t. 24, col. (1969); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 17 col., 53 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 40 (1949); Ewart, *Handb. For. Trees* t. 139 (1925); Maiden, *Crit. Rev. Eucal.* 5: t. 178 fig. 1-4 (1920), also 8: t. 4 fig. 29, 29 a col. (1929).

*Vern.*: Spotted Gum. *Distr.*: WZ—also N.S.W., Qd.

—Flowers in terminal *corymbs*, opening *March-June*; operculum single; fruit 15-20 mm. long, *strongly urceolate*, with neck-like *constriction* below orifice, the valves deeply enclosed (bark *rough and persistent throughout*, flaking off in scales; leaves *paler* beneath; far S.E.):

*E. gummifera* (J. Gært.) Hochr. in *Candollea* 2: 464 (1925).

*Metrosideros gummifera* J. Gært. *Fruct. & Semin. Plant.* 1: 170, t. 34 fig. 1 (1788).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 45 (1968); Kelly, *Eucalypts* t. 21, col. (1969); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 43, 49 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 67 (1949), as *E. corymbosa*; Flockton in Maiden, *Crit. Rev. Eucal.* 4: t. 161 fig. 1-8 & t. 162 fig. 1-6 (1919), also 8: t. 4 fig. 38, col. (1929), all as *E. corymbosa*; Ewart, *Handb. For. Trees* t. 128 (1925), as *E. corymbosa*.

*Vern.*: Red Bloodwood. *Distr.*: Z (E. from Wingan Inlet)—also N.S.W., Qd.

3. Fruit (when dry) with *many fine vertical ribs*, barrel-shaped to cylindric, 5-16 per umbel, 10-15 mm. long, *much contracted* at orifice, with deeply enclosed valves (straight, smooth-barked, widely planted tree from South Australia; adult leaves *slightly paler* beneath, broad-lanceolate, almost *devoid of any eucalyptus odour*; flowers opening *Jan.-March*; operculum smooth, very small and cupular):

\**E. cladocalyx* F. Muell. in *Linnaea* 25: 388 (1853).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 121 (1968); Kelly, *Eucalypts* t. 61, col. (1969); Costermans, *Trees Vict.* 29 (1966); Black, *Flor. S. Aust.* ed. 2: fig. 840 (1952); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 83 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 26 (1949); Flockton in Maiden, *Crit. Rev. Eucal.* 4: t. 151 fig. 1-4 (1919); Ewart, *Handb. For. Trees* t. 131 (1925).

*Vern.*: Sugar Gum. *Distr.*: Sporadic—widely planted; endemic in S.A.

[*E. langii* Maiden & Blakely in *Crit. Rev. Eucal.* 8: 72 (1929) is a supposed natural hybrid, grown in the garden of Dr. P. H. Lang at Lismore, Vic.; it had pendulous branches and only 5-6 flowers per umbel—cf. *E. cladocalyx*.]

- Fruit smooth or with <5 vertical ribs; if many-ribbed, then the tree a small mallee with *strongly odorous foliage* and *striate pointed operculum* (hemispheric to conical) 4
- 4. Adult leaves *not* or only slightly asymmetric; if bark ever spongy-fibrous throughout the trunk, then the juvenile leaves opposite for >8 pairs and glaucous or peppermint-scented 12
- Adult leaves *strongly asymmetrical* and oblique at base (i.e. *not* divided by the mid-rib into equal portions); bark *spongy-* or *woolly-fibrous* ("stringybark" type) either throughout the trunk or, at least, at the extreme base; juvenile leaves rarely opposite beyond the first 3-6 pairs, often lacking glaucescence 5
- 5. Valves *enclosed* or their points just protruding at rim of capsule; disk *flat or concave* (i.e. sloping downward into the fruit), rarely slightly convex and the fruit then longer than broad 8
- Valves *manifestly exerted* beyond orifice of capsule; disk prominent, *convex and ascending* or, if occasionally flattened, then the fruit no longer than broad (and 9-25 mm. wide) 6
- 6. Leaves *very thick and rigid*, to 4" long; buds 3-5 per umbel, on exceedingly *short stout* peduncles, strongly *rugose or warted*, the operculum 5-10 mm. wide; fruit >12 mm. wide (often 20 mm.), shorter than broad, the valve-teeth 3-5 mm. long (shrub or small tree, endemic to subalpine peaks of Grampians, flowering *Dec.-Apr.*):

*E. alpina* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 175 (1838).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 339 (1968); Kelly, *Eucalypts* t. 156, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 41 fig. 1-5 (1907); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 61 (1949); Ewart, *Handb. For. Trees* t. 166 (1925); Mueller, *Eucalyptographia* Dec. 2 (1879).

*Vern.*: Grampians Gum. *Distr.*: CDJ.

—Leaves coriaceous, but *not* thick and rigid; buds >5 per umbel, on a *distinct peduncle*, smooth to  $\pm$  rugulose, the operculum <5 mm. wide (bark fibrous to the smaller branches) 7

7. Junction of disk and staminal ring *at the widest part* of fruit; valves always *boldly exerted*; operculum *conical or rostrate, smooth*; adult foliage dull, often subglaucous (small to medium tree of dry stony hills, flowering Jan.-Apr.):

*E. macrorhyncha* F. Muell. ex Benth. *Flor. aust.* 3: 207 (1867).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 331 (1968); Kelly, *Eucalypts* t. 154, col. (1969); Costermans, *Trees Vict.* 49 (1966); Black, *Flor. S. Aust.* ed. 2: fig. 823 A on p. 536 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 51 (1949); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 125, 127 (1957); Ewart, *Handb. For. Trees* t. 164 (1925); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 39 fig. 3-11, 15-17, 20 (1907).

*Vern.*: Red Stringybark. *Distr.*: EHJMNPRSTVWZ—also S.A., N.S.W.

[The species is known to hybridize extensively with other members of the stringybark-peppermint section (*Renanthera*) in East Gippsland. *E. brevirostris* Blakely *Key Eucal.* 183 (1934) from the Lilydale and Eltham districts, Vic., is considered to be also an *E. macrorhyncha* hybrid, while *E. consideniana* Maiden may be in part derived from the same species.]

—Junction of disk and staminal ring *above the widest part of fruit*; valves usually *much exerted*; operculum  $\pm$  *hemispherical, rugulose or slightly warded*; adult foliage lustrous; juvenile leaves opposite for 3-5 pairs, oblong to cordate, soon vertical (low to very tall tree, usually of loamy soil or sands, flowering Dec.-Apr.):

*E. baxteri* (Benth.) Maiden & Blakely *Crit. Rev. Eucal.* 7: 451 (1928).

*E. santalifolia* F. Muell. var. *baxteri* Benth. *Flor. aust.* 3: 207 (1867);

*E. capitellata* sens. Ewart *Flor. Vict.* 825 (1931) et auctt. plur., *non* Sm. (1795) sens. strict.

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 337 (1968); Kelly, *Eucalypts* t. 155, col. (1969); Costermans, *Trees Vict.* 50 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 37 fig. 8-12 (1907), as *E. capitellata*, also 7: t. 284 fig. 1-4 (1928); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 129 (1957); Black, *Flor. S. Aust.* ed. 2: fig. 823 (1952); Ewart, *Handb. For. Trees* t. 165 (1925), as *E. capitellata*.

*Vern.*: Brown Stringybark. *Distr.*: BCDEJKNPTWZ—also S.A.

[A highly variable population, and the justification for its removal as a species from typical *E. capitellata* Sm. of Port Jackson is open to question.]

—As for the last, but valves *barely exerted*, operculum quite *smooth*, juvenile leaves opposite for >10 pairs, those on saplings often horizontal and *paler* beneath (tall straight tree 60-150 ft. high in moist eastern forests, flowering *Dec.-March*):

*E. muellerana* A. W. Howitt in *Trans. roy. Soc. Vict.* new ser. 2: 89, tt. 12 & 13 (1891).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 308 (1968); Kelly, *Eucalypts* t. 150, col. (1969); Costermans, *Trees Vict.* 52 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 2, t. 3 fig. 5, t. 4 fig. 20 (1903), as *E. pilularis* var. *muelleriana* & *E. pilularis*; Ewart, *Handb. For. Trees* t. 167 (1925); Beuhne, *J. Dep. Agric. Vict.* 13: 144 (1915).

*Vern.*: Yellow Stringybark. *Distr.*: STWZ—also N.S.W.

8. Fruit globular to hemispherical, >7 mm. (and often 10-12 mm.) wide, the valves *level with rim*; operculum *hemispherical*:

*E. muellerana* A. W. Howitt. [See preceding.]

Fruit globular to hemispherical, 7 mm. wide or less (often  $\pm$  5 mm.), the valves *usually enclosed*; operculum *conical to rostrate*; juvenile leaves *exceedingly scabrous* (tall eastern tree, flowering *Dec.-March*):

*E. globoidea* Blakely in *J. roy. Soc. N.S.W.* 61: 157 (1927).

*E. scabra* Du M. Cours. *Bot. Cult.* ed. 2, 7: 280 (1814)—*sp. dub.*;

*E. eugenoides* auctt., non Sieber ex Spreng. *Syst.* 4<sup>2</sup>: 195 (1828);

*E. yangoura* Blakely *Key Eucal.* 180 (1934).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 346 (1968); Kelly, *Eucalypts* t. 153, col. (1969), as *E. eugenoides*; Costermans, *Trees Vict.* 51 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 38 fig. 7-9 (1907), as *E. capitellata*, and 1: t. 40 fig. 8, 10, 14 (1907), as *E. eugenoides*; Honey *Flor. Vict.* (Dep. Agric.) ed. 5: 54 (1949), as *E. eugenoides*; Ewart, *Handb. For. Trees* t. 168 (1925), as *E. eugenoides*.

*Vern.*: White Stringybark. *Distr.*: NTWZ—also N.S.W.

[The taxon is highly polymorphic, and there seems no sound reason for segregating Victorian and south-eastern New South Wales populations as a distinct species, *E. yangoura* Blakely (*l.c.*). Blakely (1934) also identified certain collections from Wangrabbell, Orbost and Blackburn in Victoria as *E. agglomerata* Maiden in *J. roy. Soc. N.S.W.* 55: 266 (1921), *E. ligustrina* DC. *Prodr.* 3: 219 (1828), and *E. wilkinsoniana* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 25: 678 (1900) respectively. It is here considered that all Victorian material named *E. ligustrina* or *E. wilkinsoniana* is referable to the one species *E. globoidea*; but, quite recently (Oct. 1971), genuine occurrences of *E. agglomerata* near Wangrabbell have been confirmed—the squat fruits are sessile and congested.]

—Fruit pear-, top- or barrel-shaped; if *not* tapering into pedicel, then >6 mm. wide, with deeply enclosed valves and non-scabrous juvenile leaves; operculum *not* conical (buds 7-16 per umbel) 9

9. Fruit rather *suddenly* contracting into pedicel,  $\pm$  *cup- or barrel-shaped*, 6-10 mm. wide; disk *oblique, concave* the valves *deeply sunk*; juvenile

leaves and branchlets non-glaucous (medium to very large forest tree, flowering Jan.-March):

*E. obliqua* L'Hérit. *Sert. Angl.* 18, t. 20 (1792).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 362 (1968); Kelly, *Eucalypts* t. 158, col. (1969); Costermans, *Trees Vict.* 47 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 5, t. 6, t. 7 fig. 1, 5, 6, & t. 8 (1903); Black, *Flor. S. Aust.* ed. 2: fig. 818 A, K & 821 (1952); *For. Trees Aust.* (C'wealth Forest. & Timber Bur.) 135 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 49, 55 (1949); Ewart, *Handb. For. Trees* t. 174 (1925).

*Vern.*: Messmate Stringybark. *Distr.*: CDEJKMNPSTVWZ—also S.A., Tas., N.S.W.

[The three varieties *discocarpa*, *microstoma* and *pilula*, described by Blakely in *Key Eucal.* 194 (1934) from Wilson Promontory, Daylesford and Kilmore respectively, differ only slightly in fruit size and shape; they appear to represent abnormal states of the species rather than good varieties with constant features. Variety *discocarpa*, having a broad flat annular disk over the top of the capsule (10 × 9 mm.), is distinctive enough and perhaps worthy of some recognition; it is known from near Sealer's Cove and the Oberon Saddle, and has been called "Howitt's Puzzle"—Pryor & Johnson, in their *Classific. Eucal.* 81 (1971), consider it to be a hybrid, probably of *E. obliqua* × *E. muellerana*.]

—Fruit *tapering* into the pedicel, *pear- to top-shaped*, 6-10 mm. wide, the valves often *level with orifice*; saplings and often young branchlets ± *glaucous*; leaves with strong ± peppermint-like aroma, rather *thick and shining* 11

—As for the last, but fruits never > 7 mm. wide, saplings and branchlets *never glaucous* and the rather *thin leaves* neither strongly nor peppermint-scented (tall straight mountain-forest trees to 200 ft. or more) 10

10. Bark typically *smooth and greenish-white* (except at base of trunk), decorticating in very *long ribbons*; disk of fruit *inconspicuous*, *truncate* or slightly *oblique*, the valves usually *enclosed* (flowers opening Jan.-March):

*E. regnans* F. Muell. *Key Syst. Vict. Plants* 1: 236 (1888).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 369 (1968); Kelly, *Eucalypts* t. 160, col. (1969); Costermans, *Trees Vict.* 45 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 33 fig. 1, 1 a, 2, 4, 5, 10 (1905); *For. Trees Aust.* (C'wealth Forest. & Timber Bur.) 133, 139 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 23, 71 (1949); Ewart, *Handb. For. Trees* t. 183 (1925).

*Vern.*: Mountain Ash (Swamp Gum in Tas.). *Distr.*: KNSTVW—also Tas.

—Bark *thick and fibrous*, at least to the major branches; disk of fruit *prominent, conical or domed*, the valves usually slightly *exserted* (flowers opening Dec.-Feb.):

*E. fastigata* H. Deane & Maiden in *Proc. Linn. Soc. N.S.W.* 21: 809 (1896).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 368 (1968); Kelly, *Eucalypts* t. 159, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 33 fig. 1 b-c, 3, 6-9



(1905), as *E. regnans*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 137 (1957).

*Vern.*: Brown-barrel (Cut-tail). *Distr.*: SVZ—also N.S.W., A.C.T.

[Ewart, *Flor. Vict.* 829 (1931) reduced *E. fastigata* to a variety of *E. regnans* and suggested a possible hybrid origin, with *E. regnans* and *E. obliqua* as the parent species. In Victoria the tree is restricted to better-watered mountain forests of East Gippsland, but it is widespread in New South Wales (from Monaro region to the Blue Mountains); tall spire-like, smooth-barked trees on Cambewarra Mountain, N.S.W., have been referred to *E. fastigata* Deane & Maiden; but they are almost, if not quite, indistinguishable from typical *E. regnans* as it occurs in the Dandenong and Otway Ranges, Vic.]

11. Ultimate branchlets (and usually young fruits) *glaucous*; veins of adult leaves *never longitudinal*, meeting mid-rib at angles of  $>12^\circ$ ; sapling leaves very large (to  $12 \times 8''$ ), *glaucous*; disk of fruit *thin, concave-oblique*, the valves enclosed (tall montane or subalpine tree to 200 ft.; bark *woolly-fibrous* on lower half of trunk, smooth and pale above decortivating in long ribbons; flowers opening *Feb.-March*, both anthers and styles usually *well developed*):

*E. delegatensis* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 25: 305, t. 16 (1900).  
*E. gigantea* Hook. f. in *Lond. J. Bot.* 6: 479 (1847), *non* Dehnh. (1832).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 370 (1968); Kelly, *Eucalypts* t. 161, col. (1969); Costermans, *Trees Vict.* 48 (1966); Hooker f., *Flor. Tasm.* 1: t. 28, col. (1856), as *E. gigantea*; Maiden, *Crit. Rev. Eucal.* 2: t. 85 (1914), as *E. gigantea*, also 1: t. 7 fig. 2-3 (1903), as *E. obliqua*, 1: t. 32 fig. 3 (1905), as *E. obliqua* var. *alpina*, and 1: t. 43 fig. 16 (1907), as *E. virgata* var. *stricta*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 141 (1957); Ewart, *Handb. For. Trees* t. 180 (1925), as *E. gigantea*.

*Vern.*: Alpine Ash (Woolly Butt). *Distr.*: NRSVWZ—also Tas., N.S.W., A.C.T.

—As for the last, but venation of adult leaves  $\pm$  *longitudinal*; bark on young trees shaling off in *flakes or scales*, but that on mature trees persistent, *hard, non-fibrous, deeply furrowed* and of "ironbark" type (tall straight forest tree to 150 ft., ranging from sea-level to subalpine heights; young leaves of summer growth usually vivid red and lustrous; flowers opening *Sept.-Dec.*, their filaments often *devoid of anthers* and style frequently *rudimentary*):

*E. sieberi* L. A. S. Johnson in *Contr. N.S.W. Herb.* 3: 125 (1962).  
*E. sieberana* ["*Sieberiana*"] F. Muell. *Eucal. Dec.* 2 (1879)—*nom. superfl. et illegit.*

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 371 (1968); Kelly, *Eucalypts* t. 162, col. (1969); Costermans, *Trees Vict.* 57 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 45 fig. 10-15 (1908); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 143 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 65 (1949); Ewart, *Handb. For. Trees* t. 184 (1925)—all but the first three as *E. sieberiana*.  
*Vern.*: Silver-top. *Distr.*: NRSTWZ—also Tas., N.S.W.

—Ultimate branchlets *non-glaucous*; veins of leaves *semi-longitudinal*, meeting mid-rib at angles of 12-20°; sapling leaves not exceeding 6 × 2", usually only sub-glaucous; disk of fruit very *broad and flat* (or even ± convex), the valves level with it or slightly exserted (medium-sized tree of poor, usually sandy soils in S. & E. Gippsland; bark *flaky-fibrous*, of "peppermint" type, persistent to the smaller branches; flowers opening *Nov.-Dec.*):

*E. consideniana* Maiden in *Proc. Linn. Soc. N.S.W.* 29: 475 (1904).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 373 (1968); Kelly, *Eucalypts* t. 163, col. (1969); Costermans, *Trees Vict.* 54 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 46 fig. 1-8 (1908); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: fig. 35 (1949); Ewart, *Handb. For. Trees* t. 181 (1925); Beuhne, *J. Dep. Agric. Vict.* 14: 691 (1916).

*Vern.*: Yertchuk. *Distr.*: RTWXZ—also N.S.W.

[In his *Flor. Vict.* 838 (1931) Ewart expressed the possibility that *E. consideniana* may be of hybrid origin, with *E. macrorhyncha* and *E. dives* as parent stocks; it appears to combine certain features of both.]

12. Veins of adult leaves *not* longitudinal, diverging from mid-rib at angles of >20°, or, if ever almost longitudinal, then *indistinct* and either the foliage dull or the trees very small mallees 18  
Veins of the thick and usually shining adult leaves very *prominent*, almost *longitudinal* (diverging from mid-rib at angles usually of 12° or less); trees not normally mallee-like 13
13. Operculum *conical to rostrate*, about as long as calyx-tube; buds and fruits *sessile*, densely clustered, the latter ± *globular* and up to 6 mm. wide (small spreading subalpine trees) 17  
Operculum *hemispherical*, much *shorter* than calyx-tube, ± obtuse (but often apiculate); buds and fruits *pedicellate*, the latter *pear- or cup-shaped* and often >6 mm. wide 14
14. Bark either smooth and whitish (sometimes mottled) throughout or rough hard and deeply furrowed on trunk; smaller branchlets *often glaucous*; juvenile leaves 2" or more wide (sometimes up to 6"), thick and *glaucous*. 16  
Bark of trunk flaky-fibrous ("peppermint" type); smaller branchlets *not glaucous*; juvenile leaves <2" wide, sub-glaucous 15
15. Juvenile leaves narrow-lanceolate, acuminate; adult leaves with ± *indistinct* veins which diverge at angles of 12-20° from mid-rib; bark rough and persistent to smaller branches:

*E. consideniana* Maiden. [See above]

Juvenile leaves elliptical to broad-lanceolate; adult leaves shining, with *distinct and almost longitudinal* venation (divergence 12° or less); bark smooth and deciduous on all but the main branches (small to medium-sized, spreading, near-coastal trees, flowering about *August*):

*E. nitida* Hook. f. *Flor. Tasm.* 1: 137, t. 29 col. (1856).

*E. simmondsii* Maiden *Crit. Rev. Eucal.* 6: 344 (1922);

*E. vitrea* sens. Ewart *Flor. Vict.* 841 (1931) pro parte, et auctt. plur., non R. T. Baker in *Proc. Linn. Soc. N.S.W.* 25: 303 (1900).

*Illust.*: Hooker f. (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 410 (1968); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 31 fig. 1 (1905), as *E. amygdalina* var. *nitida*, also 4: t. 160 fig. 1 (1919); Curtis, *Student's Flor. Tasm.* 1: 220 fig. 59 E (1956), as *E. simmondsii*.

*Vern.*: Shining Peppermint (Smithton Peppermint). *Distr.*: DEPTXW—also Tas.

[There is strong evidence that *E. vitrea* R. T. Baker (*l.c.*), from the tablelands of south-eastern New South Wales is a natural hybrid between *E. pauciflora* Sieb. ex Spreng. and *E. dives* Schauer. Such a hybrid doubtless exists in some montane parts of Victoria, but the name "*E. vitrea*" has been applied to other populations, particularly those on swampy heathland in the Otways and far west of the State, which are of different origin and reproduce from seed without reversion to other parent species—they are systematically close to *E. dives* and undoubtedly conspecific with *E. nitida* of northern Tasmania, the eastern islands of Bass Strait and Wilson Promontory.]

16. Bark of trunk *smooth and whitish* (or mottled) except at the very base, sometimes streaked with brilliant colours; fruit often *cup-shaped* and up to 10 mm. wide, very shortly pedicellate, always with a *broad flat disk* (small to large spreading tree of more open forest, cold-tolerant and usually of crooked growth; flowers opening *Oct.-Jan.*):

*E. pauciflora* Sieber ex Spreng. *Syst.* 4<sup>2</sup>: 195 (1827).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 394 (1968); Kelly, *Eucalypts* t. 168, col. (1969); Costermans, *Trees Vict.* 27 (1966); Maiden, *Crit. Rev. Eucal.* 1: t. 26 fig. 1-5, t. 27 fig. 1, 4 (5 var. with rough bark), t. 28 fig. 1-2 (1904), all as *E. coriacea*, and t. 7 fig. 4 (1903), as *E. obliqua*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 23 col., 145 (1957); Black, *Flor. S. Aust.* ed. 2: fig. 819 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 44 (1949), as *E. coriacea*; Ewart, *Handb. For. Trees* t. 182 (1925).

*Vern.*: White Sallee. *Distr.*: DEJNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[The var. *alpina* Ewart, *Handb. For. Trees* 367 (1925) (Snow Gum), described as a distinct species *E. niphophila* by Maiden & Blakely in *Crit. Rev. Eucal.* 8: 34 (1929), represents merely the upper altitudinal limit or end-point of an *E. pauciflora* cline; it differs from the typical form of the species in its more stunted habit, smallness of all the parts, shorter straighter leaves and tendency to greater glaucescence (often extremely pruinose on branchlets, buds and fruits). *E. pauciflora* is recorded as hybridizing with *E. dives* Schauer, and hybrids with *E. delegatensis* R. T. Baker are presumed.]

- Bark of trunk persistent, hard, *rough and deeply furrowed* ("ironbark" type), but shaling away in flakes or scales on saplings and young trees, smooth and glaucous on smaller branches; fruit *pear-shaped*, rarely >8 mm. wide, distinctly pedicellate, with *narrow ± flat or concave disk* and enclosed valves:

*E. sieberi* L. A. S. Johnson. [See p. 414]

17. Leaves *elliptical* to broadly lanceolate, rarely >3" long, rather *dull*, with very *prominent* veins; juvenile leaves almost *orbicular*; fruit up

to 5 mm. wide (bark smooth, olive-green to slate-grey, rough and flaky at butt; flowering time erratic, usually *Apr.-Oct.*):

*E. stellulata* Sieber ex DC. *Prodr.* 3: 217 (1828).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 398 (1968); Kelly, *Eucalypts* t. 169, col. (1969); Costermans, *Trees Vict.* 28 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 25, fig. 1-4, 7 (1904); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 45 (1949); Ewart, *Handb. For. Trees* t. 161 (1925); Mueller, *Eucalyptographia* Dec. 6 (1880); Maiden, *For. Flor. N.S.W.* 2: t. 54 (1906); Beuhne, *J. Dep. Agric. Vict.* 13: 484 (1915).

*Vern.*: Black Sallee. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Leaves *narrow-lanceolate to linear*, up to 6" long, *shining*, with  $\pm$  *indistinct* veins; juvenile leaves *oblong-lanceolate*; fruit 5-7 mm. wide (bark smooth and white except at very base; flowers opening *Nov.-Jan.*—endemic on Mt. Buffalo):

*E. mitchelliana* Cabbage in *J. roy. Soc. N.S.W.* 52: 457—addendum slip (1919).

*E. mitchellii* Cabbage in *J. roy. Soc. N.S.W.* 52: 457 (1919), *non* Ettingsh. (1888).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 399 (1968); Cabbage, *J. roy. Soc. N.S.W.* 52: tt. 38 & 39, *vide* p. 457 addend. (1919); Flockton in Maiden, *Crit. Rev. Eucal.* 5: t. 192 fig. 5 (1921), as *E. mitchelli*.

*Vern.*: Buffalo Sallee. *Distr.*: R.

18. Buds >3 per umbel or cluster 29  
Buds regularly 3 per umbel 19

Bud large, *solitary*, axillary, *sessile* or almost so, *quadrangular*,  $\pm$  *glaucous*, *wrinkled* and *warty* (including the cupulate or flattened operculum); fruit depressed-globular to broadly top-shaped, 4-ribbed, 15-30  $\times$  10-15 mm., the convex disk very wide and the strong valves level or slightly exserted (medium to large tree of cool mountain forests near sea, flowering *June-Nov.*; bark rough at base, elsewhere smooth, greyish-white, decorticating in long ribbons; young 4-angled stems and juvenile leaves highly glaucous, sticky and very aromatic, the latter opposite for many pairs, cordate-ovate, sessile to amplexicaul; adult leaves petiolate, narrow-lanceolate to falcate, up to 1 ft. long, dark glossy green):

*E. globulus* Labill. *Voy. Rech. La Pérouse* 1: 153 (1800).

*Illust.*: King & Burns, *Wildflowers Tasm.* 43, col. (1969); Chippendale, *Eucal. Buds & Fruits* fig. 248 (1968); Kelly, *Eucalypts* t. 129, col. (1969); Costermans, *Trees Vict.* 26 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 79 fig. 1-5 (1913); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 105 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 28 (1949); Ewart, *Handb. For. Trees* t. 121 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 59 (1886).

*Vern.*: Southern Blue Gum. *Distr.*: KPT—also Tas. (the State floral emblem); naturalized in western America from California to Argentina (incl. Guatemala & Chile). [See notes under *E. st-johnii*, p. 419.]

19. Flowers on manifest and often *elongated* pedicels, *not* cruciform; filaments white, pink or red; staminal ring *broad, conspicuous* after flowering; opercula conical to rostrate; fruits goblet-shaped, 10 mm. long or more, with *deeply enclosed* valves 28  
 Flowers shortly-stalked or sessile, *cruciform* (arranged in the form of an upright cross); staminal filaments white or creamy and ring *inconspicuous* 20
20. Buds *smooth* or almost so, often glaucous, <8 mm. wide or, if wider (rarely) then the tree of a smooth-barked glaucous mountain mallee; juvenile leaves opposite for an *indefinite number* of pairs 22  
 Buds manifestly *rugose or warty, sessile*, >8 mm. wide; leaves thick, coriaceous and shining 21
21. Blade of adult leaf very thick, up to 4" in length, <3 times as long as broad; buds *not glaucous*, exceedingly rugose, never rostrate (small crooked stringy-barked tree or shrub of subalpine peaks in Grampians):  
*E. alpina* Lindl. [See p. 411]

Blade of adult leaf >4" in length (occasionally 2 ft. or more), >3 times as long as broad; juvenile leaves cordate-ovate to broad-lanceolate *highly glaucous*, sessile on square stems; buds very *glaucous*, conspicuously *2-ribbed*, with or without finer ribbing between; operculum *rostrate* at centre; fruit <1.5 cm. wide, tapering into a *short pedicel*; common peduncle *manifest*, to 1 cm. long (medium to tall, smooth-barked trees of E. Gippsland; flowers opening *Sept.-Jan.*):

*E. pseudoglobulus* Naudin ex Maiden *Crit. Rev. Eucal.* 8: 28 (1929).

*Illust.*: Maiden, *Crit. Rev. Eucal.* 2: t. 80 fig. 9 a & b (1913), also 6: t. 214 fig. 6 a & b (1922).

*Vern.*: Gippsland Blue Gum. *Distr.*: TVWZ—also N.S.W.

[Putative hybrids with *E. glaucescens*, *E. tereticornis*, *E. cypellocarpa* and *E. botryoides* occur in East Gippsland. The closely related but much rarer *E. maidenii*, with >3 buds per cluster, is included on p. 429.]

—As for *E. pseudoglobulus*, but the fruits *larger* (1-2 cm. wide) and *sessile*, and the common peduncle virtually *absent* (tall trees of wide distribution, ascending to the subalps):

*E. st-johnii* (R. T. Baker) R. T. Baker *Hardwoods Aust.* 218 (1919).

*E. globulus* Labill. var. *st-johnii* R. T. Baker in *Vict. Nat.* 30: 127, t. 7 (1913);

*E. bicostrata* Maiden et al. in J. H. Simmonds *Trees N.Z. (Eucal.)* 133, Bot. t. 48 fig. A, B, C, F & G (1927).

*Illust.*: Baker (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 250 (1968), as *E. bicostrata*; Kelly, *Eucalypts* t. 130, col. (1969), as *E. bicostrata*; Costermans, *Trees Vict.* 26 (1966), as *E. bicostrata*; Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 79 fig. 6, 8, 9, 11, 12, and t. 80 fig. 7 (1910-14), as *E. globulus*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 107 (1957), as *E. bicostrata*.

*Vern.*: Eurabbie (St. John's Blue Gum). *Distr.*: JKNPRTV—also N.S.W.

[*E. st-johnii* sometimes overlaps with occurrences of typical *E. globulus* (e.g. on Wilson Promontory, Phillip Island and the Otways), where puzzling intermediate populations appear. It is so closely related to the latter species that Ewart may have been justified in returning it to a variety of *E. globulus*, *Flor. Vict.* 804 (1931). Ewart (*l.c.*) also reduced *E. bicostata* to varietal status under *E. globulus*. Despite the maintenance by Blakely, *Key Eucal.* 153-54 (1934), of *E. bicostata* and *E. st. johnii* as distinct species, there appears to be no constant line of demarcation between them—specimens of *E. st-johnii* from the type locality (Lerderderg R. near Bacchus Marsh) have all the features portrayed for *E. bicostata* by its authors (*l.c.*). *E. tereticornis*, *E. goniocalyx*, *E. cypellocarpa* and *E. glaucescens* appear to hybridize with *E. st-johnii* or with *E. pseudoglobulus* in various eastern parts of the State. *E. paradoxa* Maiden & Blakely, recorded for Metung, Vic., is presumed to be a *E. pseudoglobulus* × *E. cypellocarpa* hybrid. *E. maidenii* var. *williamsonii* Blakely (1934) of Mallacoota is a curious hybrid involving *E. pseudoglobulus* and *E. botryoides*.]

—As for the last, but buds quadrangular and fruit always with 4 major ribs, the fruit seldom <2 cm. wide [solitary buds are much more frequent in the species than the 3-budded umbel] (trees always near coast and never subalpine in Victoria):

*E. globulus* Labill. [See p. 417]

22. Fruit ± globular to top-shaped, the prominent disk *convex or domed* and valves *exserted* 24  
Fruit hemispherical to cup-shaped; disk *narrow, flattened*; valves enclosed or just reaching the orifice; operculum much shorter than calyx-tube (small, infrequent, straggling, alpine or subalpine, ± glaucescent trees) 23
23. Operculum cupulate, ± *obtuse*; fruit <7 mm. wide; juvenile leaves very glaucous, *perfoliate*, persisting on saplings, the pairs often *separating from stem* at centre and spinning around it when the wind blows (bark smooth, whitish and ± blotched; flowers opening *Jan.-March*):

*E. perriniana* F. Muell. ex Rodway in *Pap. roy. Soc. Tasm.* 1893: 181 (1894).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 242 (1968); Kelly, *Eucalypts* t. 121, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 108 fig. 1 (1916), also 2: t. 83 fig. 11 (1913), the latter as *E. cordata*; Ewart, *Handb. For. Trees* t. 135 (1925), as *E. perrineana*.

*Vern.*: Spinning Gum (Dargo Gum). *Distr.*: SVWZ—also Tas., N.S.W., A.C.T.

—Operculum *flattened*, with *mucronate or almost rostrate* central boss; fruit 7-10 mm. wide; juvenile leaves very glaucous, sessile and ± orbicular but *never perfoliate* (habit often mallee-like; bark smooth, white, decorticating in reddish flakes; flowers opening *March-May*):

*E. glaucescens* Maiden & Blakely *Crit. Rev. Eucal.* 8: 56 (1929).

*E. gunnii* sens. Ewart *Flor. Vict.* 811 (1931), *non* Hook. f. (1844).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 237 (1968); Kelly, *Eucalypts* t. 120 col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 108 fig. 8, also t. 109 fig. 1 (1916), as *E. gunnii*.

*Vern.*: Tingaringy Gum. *Distr.*: SVWZ—also N.S.W.

[Material from Stradbroke Chasm near Suggan Buggan, and also Mt. Wheeler near Little R., has the habit and buds of *E. glaucescens* but fruits more closely approaching those of the co-extensive *E. pseudoglobulus*; presumably it is the result of hybridism between the two species.]

24. Juvenile leaves pale to bright green, *never glaucous*, sessile,  $\pm$  stem-clasping, *broad- to narrow-lanceolate*; buds non-glaucous, the operculum at least as long as calyx-tube (medium to tall tree, flowering at almost any time of year, but chiefly in *summer*; bark smooth and white throughout, decorticating in long ribbons, or sometimes rough, persistent and subfibrous for varying heights up the trunk):

*E. viminalis* Labill. Nov. Holl. Plant. Specim. 2: 12, t. 151 (1806).

*Illust.*: Labillardière (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 277 (1968); Kelly, *Eucalypts* t. 138, col. (1969); Costermans, *Trees Vict.* 21 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 117 fig. 3-6 & 8, t. 118 fig. 1, 6, 7, 11-13, t. 119 fig. 1-6, 11, 14 (1916); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 111, 147 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 32, 55 (1949); Black, *Flor. S. Aust.* ed. 2: fig. 818 H-I & 843 (1952); Ewart, *Handb. For. Trees* t. 144 (1925).

*Vern.*: Manna Gum (Ribbon Gum). *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.; naturalized in Chile.

[The var. *racemosa* F. Muell. ex Maiden *Crit. Rev. Eucal.* 3: 182, t. 118 fig. 9 (1916) occurs frequently on sandy coastal heaths between Melbourne and Metung, and is recorded for South Australia also. It is the form of the species most relished by koalas, and is distinguished by its low irregular habit, rough bark extending to the branches, and tendency to have the umbels in leafless racemes; multi-flowered umbels often occur and may indicate a hybrid ancestry. The taxon was raised to specific rank, as *E. pryoriana*, by L. A. S. Johnson in *Contr. N.S.W. Herb.* 3: 115 (1962); but within a single district (e.g. Pt. Leo & Red Hill) every gradation may be found between this and more typical smooth-barked *E. viminalis*. The var. *rhynchocorys* F. Muell. ex Maiden *l.c.* fig. 8 (1916), from Snowy River, differs only in its more rostrate operculum and is hardly worthy of recognition. *E. viminalis* is known to hybridize naturally with  $\pm$  20 species of the genus, and in this regard is probably more promiscuous than almost any other eucalypt. Interbreeding definitely occurs in Victoria with *E. aromaphloia* (? producing *E. huberana* Naudin), *E. camaldulensis*, *E. dalrympleana* and *E. ovata*; hybrids with other members of the Section *Macrantheræ* doubtless occur in this State.]

—Juvenile leaves *glaucous*, sessile, *orbicular to cordate-ovate*; buds often  $\pm$  glaucous 25

25. Young branchlets and buds *highly glaucous or pruinose*; bark *rough and shortly fibrous* on trunk and often on main branches 27

Young branchlets and buds *not* or only slightly glaucous; bark *smooth and white* except at extreme base, decorticating in ribbons 26

26. Buds about 6×4 mm.; fruit 5-7 mm. long and broad (widespread, medium to tall tree, rarely reaching 100 ft., the white bark changing to salmon-pink or red before it is shed late in summer; flowers opening *Nov.-Feb.*):

**E. rubida** H. Deane & Maiden in *Proc. Linn. Soc. N.S.W.* 24: 456 (1899).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 235 (1968); Kelly, *Eucalypts* t. 118, col. (1969); Costermans, *Trees Vict.* 22 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 109 fig. 2-10, 12, 13, t. 110 fig. 2-5, 6 a, 6 d, 7, t. 111 fig. 3 a, 3 d (1916), also 8: t. 110 fig. 110-111 (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 33 (1949); Ewart, *Handb. For. Trees* t. 145 (1925).

*Vern.*: Candlebark. *Distr.*: JNRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Buds about  $8 \times 5$  mm.; fruit 7-10 mm. long and broad (tall forest tree of E. highlands, flowering chiefly *March-May*; intermediate leaves often  $\pm$  undulate):

**E. dalrympleana** Maiden *For. Flor. N.S.W.* 7: 137, t. 241 (1922).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 236 (1968); Kelly, *Eucalypts* t. 119, col. (1969); Maiden, *For. Flor. N.S.W.* 7: t. 241 fig. A-F (1922); Flockton in Maiden, *Crit. Rev. Eucal.* 5: t. 202 fig. 1-2 (1921), and 7: t. 267 fig. 4 (1925); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 101 (1957).

*Vern.*: Mountain Gum (Kindlingbark). *Distr.*: JNRSVWZ—also Tas., N.S.W., A.C.T.

[In field and morphological features this tree is so close to *E. rubida* that specific separation is by no means always easy, and there would be good reason for reducing it to varietal rank under the latter species. Ewart, *Flor. Vict.* 819 (1931), was hardly justified in treating *E. dalrympleana* as a form of *E. viminalis*—a totally *non-glaucous* tree having very different *lanceolate* juvenile foliage.]

27. Fruit  $10-13 \times 8-10$  mm., the valves *exserted* for 2-3 mm. above disk; operculum *hemispherical* but *apiculate*; intermediate and adult leaves *petiolate* (tall mountain-forest tree of N.E. highlands, flowering *Feb.-March*; timber yellow to pale brown):

**E. chapmaniana** A. K. Cameron in *Vict. Nat.* 64: 52, t. 4 (1947).

*Illust.*: Cameron (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 421, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 235 a (1968).

*Vern.*: Bogong Gum. *Distr.*: RUVW—also N.S.W. (Khancoban area of Upper Murray R.).

[A suspected hybrid between *E. pseudoglobulus* and *E. glaucescens* would probably fit here in the key, except as to size of tree—see remark under latter species, at top of p. 420.]

—Fruit 6-9 mm. long and broad, the valves *not projecting*  $> 1$  mm. above disk, remaining *indefinitely* on tree; calyx-tube with slightly *concave sides*; operculum *conical*, straight-sided; adult leaves *alternate*, distinctly *petiolate* (small to medium-sized tree usually of heavy soil on damp alluvial flats, flowering *Jan.-July*; timber reddish):

**E. cephalocarpa** Blakely *Key Eucal.* 164 (1934).

*E. cinerea* F. Muell. ex Benth., var. *multiflora* Maiden *Crit. Rev. Eucal.* 3: 7, t. 89 fig. 7-9 (1914).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 284 (1968); Costermans, *Trees Vict.* 53 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 89 fig. 7-9, & t. 90



fig. 1-2 (1917), as *E. cinerea* var. *multiflora*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 58 (1949), as *E. cinerea* var. *multiflora*; Ewart, *Handb. For. Trees* t. 138 (1925), as *E. cinerea* var. *multiflora*.

*Vern.*: Silver-leaf Stringybark. *Distr.*: NPRSTWXZ—also N.S.W.

[In their *Classific. Eucal.* 51 & 63 (1971), Pryor & Johnson have relegated this taxon to subspecific rank under *E. cinerea*. It is known to hybridize with *E. viminalis* Labill., and probably with *E. aromaphloia* Pryor & Willis. Buds and fruits are normally in clusters of  $>3$ —see also p. 430.]

—As for the last, but adult leaves *sessile* or almost so, opposite or alternate and very glaucous, fruit *not remaining* on tree beyond 2 years, and calyx-tube *straight-sided* (small to medium tree of poor slopes and dryish flats, flowering *Sept.-Dec.*):

*E. cinerea* F. Muell. ex Benth. *Flor. aust.* 3: 239 (1867).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 283 (1968); Kelly, *Eucalypts* t. 140, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 89 fig. 1-6 (1917), and 8: t. 10 fig. 104, 104 a, 106, col. (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 58 (1949); Ewart, *Handb. For. Trees* t. 137 (1925).

*Vern.*: Argyle Apple (Mealy Stringybark). *Distr.*: NRSW—also N.S.W., A.C.T.

28. Operculum about *as long as* calyx-tube; juvenile leaves opposite for an *indefinite number* of pairs, *sessile* or almost so, cordate, *orbicular to broadly lanceolate*,  $>1$ " wide (small to medium tree, preferring heavy alluvial soils, flowering *May-Dec.*; bark *smooth and deciduous* except at butt, often mottled or streaked with white, blue and yellow; timber yellowish):

*E. leucoxylon* F. Muell. in *Trans. Vict. Inst.* 33 (1855).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 542 (1968); Kelly, *Eucalypts* t. 212, col. (1969); Costermans, *Trees Vict.* 30 (1966); Maiden, *Crit. Rev. Eucal.* 2: t. 56 fig. 1-8 (1910), and 8: t. 9 fig. 98 & 99 col. (1931); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 179 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 24 (1949); Black, *Flor. S. Aust.* ed. 2: fig. 818 c, n & o, also 831 (1952); Ewart, *Handb. For. Trees* t. 173 (1925).

*Vern.*: Yellow Gum or White Ironbark (Blue Gum in S.A.). *Distr.*: BCDEHJMN PR—also S.A., N.S.W.

[The var. *erythrostema* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 127 (1856), of which var. *macrocarpa* J. E. Brown *For. Flor. S. Aust.* (1883) is a synonym, differs from the usual form in its smaller stature but *much larger buds and fruits* (the latter  $15-25 \times 10-20$  mm.). Although widely planted for ornament, its natural occurrence in Victoria is restricted to the extreme south-west corner—about Nelson. Flowers may have red or white filaments, as in other populations of *E. leucoxylon*, while the calyx-tube (and often the operculum too) is *angular* or  $\pm$  winged. The name *E. jugalis* Naudin was used by Blakely for trees having rougher bark, smaller fruits and 3- to 7-flowered umbels. As applied to material from South Australia, it probably referred to a hybrid swarm between *E. leucoxylon* and *E. odorata* Behr & Schlechtendal or *E. porosa* F. Muell. in Miq.; but the application of this name in Victoria concerns a different population—most probably the hybrid *E. leucoxylon*  $\times$  *E. melliodora* A. Cunn.—and it should no longer be used. In the

far west of the State (Little Desert etc.) there is an extremely glaucous, often pendulous form of *E. leucoxylon*, known to local apiarists as "Drooping Blue Gum" and perhaps identical with the var. *pruinosa* F. Muell. in Miq. (*l.c.*.)]

—Operculum much *shorter* than calyx-tube; juvenile leaves opposite for *only 3-4 pairs*, subglaucous, *petiolate, linear to oblong*, <1" wide; adult foliage also often grey-green or bluish (medium-sized to tall tree of dryish inland auriferous country or sandy-gravelly formations near sea, flowering *June-Feb.*; bark *rough and persistent* to smaller branches, of "ironbark" type, very thick, hard, *black, deeply furrowed* and impregnated with kino; timber red):

*E. sideroxylon* A. Cunn. ex W. Woolls in *Proc. Linn. Soc. N.S.W.* ser. 2, 1: 859 (1886).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 329, col. (1968); Rosser, *Wildflowers Vict.* 45, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 541 (1968); Kelly, *Eucalypts* t. 211, col. (1969); Costermans, *Trees Vict.* 56 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 55 fig. 5-13 (1910), and 8: t. 7 fig. 75-77, col. (1930); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 177 (1957); Ewart, *Handb. For. Trees* t. 172 (1925); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 49 A-F (1906).

*Vern.*: Red Ironbark. *Dist.*: HJKNMPSWZ—also N.S.W., Qd.

[Where *E. sideroxylon* accompanies *E. leucoxylon*, trees of intermediate character sometimes occur and hybridism between the two is suspected.]

29. Bark *black, hard, persistent, deeply furrowed*; peduncles  $\pm$  terete; flowers large,  $\pm$  *pendulous on long slender stalks*, the filaments often rosy; fruit about 10-12 mm. long and wide, with narrow concave disk and deeply *enclosed* valves:

*E. sideroxylon* A. Cunn. ex W. Woolls. [See preceding]

—As for the last, but bark smooth and deciduous and fruit smaller (<10 mm. wide):

*E. leucoxylon* F. Muell. [See p. 422]

[The occasional forms of *E. leucoxylon*, having more than 3 buds per umbel, are probably indicative of hybrid origin—admixture with *E. melliodora* for example.]

—Bark, if persistent throughout, then *not* black and deeply furrowed; if fruit ever attaining 10  $\times$  10 mm. (rarely), with deeply-sunk valves, *then* on short stout pedicels and the common peduncle much flattened (angular) 30

30. Disk of fruit inconspicuous—a *narrow rim or lining*, often sloping steeply downwards into capsule; valves *usually enclosed* (strongly exerted only in a few mallees with long-stalked pilular fruits); a broad staminal ring sometimes present,  $\pm$  *hiding the disk* 52

Disk of fruit obvious, often *comparatively broad*, either *convex or flat* [not to be confused with a broad or flattened staminal ring which always lies *exterior* to disk]; valves either exerted or almost level with orifice; if trees ever of mallee habit, then very localized and

- not* occurring in the arid north-west; leaves *never crenulate* on margins 31
31. Fruit <8 mm. wide or, if ever >8 mm., then either the fruit top- to funnel-shaped (with straight sides), the valves long-exserted or plant a subalpine mallee shrub; juvenile leaves often glaucous 35  
Fruit 8-15 mm. wide,  $\pm$  *globular to hemispherical*; valves enclosed or only slightly protruding from orifice; juvenile leaves *never* glaucous (or  $\pm$  subglaucous only in *E. fraxinoides*) 32
32. Pedicel of fruit *very short or lacking*; disk comparatively *broad* (mallees or small near-coastal trees <30 ft. high; bark smooth and deciduous for greater part of trunk, white or greyish) 34  
Pedicel *conspicuous*, at least  $\frac{1}{2}$  the length of fruit; disk rather *narrow* (tall, straight, eastern forest trees to 100 ft. or more; bark persistent and fibrous, at least on lower part of trunk) 33
33. Bark thick and fibrous to the smaller branches ("stringybark" type); peduncle  $\pm$  *terete* or slightly angled; operculum *hemispherical* (leaves *never* peppermint-scented):

*E. muellerana* A. W. Howitt. [See p. 412]

Bark scaly-fibrous ("peppermint" type) for up to 30 ft. along trunk, then smooth and white or cream; peduncle manifestly *flattened* or quadrangular; operculum *conical* to rostrate (tree with somewhat curved, peppermint-scented leaves, restricted in Victoria to extreme south-east on well-drained slopes of Howe Ranges; flowers opening *Dec.-Feb.*):

*E. fraxinoides* H. Deane & Maiden in *Proc. Linn. Soc. N.S.W.* 23: 412, t. 19 (1898).

*Illust.*: Eckert in Deane & Maiden (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 381 (1968); Maiden, *Crit. Rev. Eucal.* 1: t. 44 fig. 1 & 5 (1907), as *E. virgata*.  
*Vern.*: White Ash. *Distr.*: Z—also N.S.W.

[This is one of several Victorian populations hitherto erroneously referred to *E. pilularis* Sm.—a species that does not extend beyond the south coast of N.S.W. Records of *E. pilularis* (Blackbutt) for other parts of the State—e.g. Mt. Macedon, Macalister River and Wilson Promontory—were all based upon mis-identifications, principally of *E. muellerana* and *E. delegatensis*.]

34. Fruit <10 mm. wide, quite *sessile*, very congested and separable *only with difficulty*; operculum *hemispherical* to broadly conic, *shorter* than the squat calyx-tube; juvenile leaves opposite for an *indefinite number* of pairs, passing into intermediate leaves >2" wide (small bushy endemic tree, usually on damp near-coastal flats in S. Gippsland, near Cape Otway & Lower Glenelg R.; flowering *Aug.-Feb.*):

*E. kitsoniana* Maiden *Crit. Rev. Eucal.* 3: 164, t. 117 fig. 1-2 (1916).

*Illust.*: Flockton in Maiden (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 264 (1968); Kelly, *Eucalypts* t. 133, col. (1969); Ewart, *Handb. For. Trees* t. 136 (1925); Garnet, *Wildflowers Wilson's Prom.* fig. 611 (1971).  
*Vern.*: Bog Gum (Gippsland Mallee). *Distr.*: EKT.

—Fruit >10 mm. wide, often *shortly stalked*, separating *easily*; operculum *conical to rostrate*, equal to or longer than calyx-tube; juvenile leaves opposite for 6-12 pairs, these and intermediate leaves <2" wide (mallee or small tree of calcareous sand at Cape Nelson in far S.W. of State, flowering *Oct.-Jan.*):

*E. diversifolia* Bonpl. *Descr. Plant. Malm.* 35, t. 13 (1814).

*Illust.*: Bonpland (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 297 (1968); Kelly, *Eucalypts* t. 144, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 36 fig. 5-8 (1905); Black, *Flor. S. Aust.* ed. 2: fig. 822 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 48 (1949); Ewart, *Handb. For. Trees* t. 175 (1925), as *E. santalifolia*.

*Vern.*: Coast Gum (Sandal Gum, Soap Mallee). *Distr.*: E—also S.A.

35. Leaves *not* peppermint-scented, the veins diverging from mid-rib at angles of >20° (if otherwise, rarely, then buds and fruits sessile); flowers <10 per umbel 37

Leaves with *strong peppermint odour and taste* (often burning), the oil rich in piperitone; veins diverging from mid-rib at angles usually <20° (often semi-longitudinal); buds and fruits *long-stalked*, 10-20 per umbel (rarely 7-9) 36

36. Bark fibrous and persistent only at base, *smooth and white* on branches and major part of trunk; juvenile leaves pale green, narrow-lanceolate; adult leaves linear-lanceolate, acuminate, 4-8" long; buds often 15-30 per umbel; fruit <5 mm. wide, ± pilular, on very slender pedicel, the disk very *narrow and inconspicuous* (straight slender tree to 100 ft. or more, usually near streams and in Victoria restricted to E. Gippsland; flowers opening *Aug.-Dec.*):

*E. elata* Dehnh. *Cat. Plant. Hort. Camald.* 1-28 (1829).

*E. andreana* Naudin in *Rev. hort., Paris* 1890: 346, fig. 104 & 105 (1890);

*E. radiata* sens. Ewart *Flor. Vict.* 840 (1931) et auctt. plur., *non* Sieber ex DC. (1828);

*E. lindleyana* sens. Blakely *Key Eucal.* 209 (1934), *non* DC. (1828);

*E. numerosa* Maiden *For. Flor. N.S.W.* 2: 146 (1905).

*Illust.*: Naudin (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 481, col. (1968), as *E. andreana*; Chippendale, *Eucal. Buds & Fruits* fig. 406 (1968); Kelly, *Eucalypts* t. 172, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 30 fig. 1 (1905), as *E. amygdalina* var. *numerosa*, also 8: t. 6 fig. 55-57 a, col. (1930), as *E. numerosa* (seedlings); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 78 (1949), as *E. radiata*; Ewart, *Handb. For. Trees* t. 179 (1925), as *E. radiata*.

*Vern.*: River Peppermint (Wang-ngara of Snowy R. aborig.). *Distr.*: SWZ—also N.S.W.

—Bark flaky-fibrous ("peppermint" type, with diagonally interwoven fibres) and *persistent* to the smaller branches; juvenile leaves *green*, narrow- to broad-lanceolate, <2 cm. wide; venation of adult leaves ± *indistinct*; fruit usually >5 mm. wide, hemispherical to pyriform,

the disk small but *flattened and distinct* (small to large, widespread tree, flowering Oct.-Jan.):

*E. radiata* Sieber ex DC. *Prodr.* 3: 218 (1828).

*E. australiana* R. T. Baker & H. G. Smith in *J. roy. Soc. N.S.W.* 49: 514-16 (1916);

*E. robertsonii* Blakely in *J. roy. Soc. N.S.W.* 61: 167-172 (1927).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 345 & 358, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 411 (1968); Kelly, *Eucalypts* t. 175, col. (1969); Costermans, *Trees Vict.* 43 (1966); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 60 (1949), as *E. amygdalina*; Ewart, *Handb. For. Trees* t. 163 (1925), as *E. amygdalina*; Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 29 fig. 4-6, 8 & 9 (1905), as *E. amygdalina*, also t. 30 fig. 2 (1905), as var. *numerosa*.

*Vern.*: Common, Black or Narrow-leaf Peppermint. *Distr.*: JKNPRSTVWZ—also N.S.W., A.C.T.

[The species displays such polymorphy throughout eastern Victoria that, from present knowledge, it is impracticable to segregate Baker's *E. australiana* (l.c.) or Blakely's *E. robertsonii* (l.c.)—even as clear-cut varieties, having very small  $\pm$  pilular fruits and glaucous branchlets respectively. E. Cheel, in *Aust. Nat.* 11: 100 (1943), also expressed unwillingness to separate either as species distinct from *E. radiata*. The latter represents the optimum development within this complex; it is a tall highland tree (to 150 ft.) with superior durable timber, subglaucous  $\pm$  penninerved adult leaves, and glaucescent  $\pm$  rostrate buds. *E. radiata* (sens. lat.) has been recorded as hybridizing with *E. dives* Schauer, *E. pauciflora* Sieber ex Spreng. and *E. fastigata* Deane & Maiden.]

—As for the last, but juvenile leaves *glaucous*, cordate, ovate to broad-lanceolate, 2-6 cm. wide, adult leaves often bluish with *distinct* irregular venation, and the *prominent* disk of fruit flat or  $\pm$  convex (medium-sized spreading tree usually of poor stony ridges, flowering Oct.-Dec.):

*E. dives* Schauer in Walp. *Repert. Bot. syst.* 2: 926 (1843).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 359, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 417 (1968); Kelly, *Eucalypts* t. 176, col. (1969); Costermans, *Trees Vict.* 44 (1966); Maiden, *Crit. Rev. Eucal.* 1: t. 35 fig. 1-4 (1905), and 8: t. 6 fig. 59-61, col. (1930); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 151 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 74 (1949); Ewart, *Handb. For. Trees* t. 162 (1925).

*Vern.*: Broad-leaved or Blue Peppermint. *Distr.*: JKNPRSTVWXZ—also N.S.W., A.C.T.

[Hybrids with *E. radiata* (sens. lat.) are known, and others with *E. pauciflora* and *E. macrorhyncha* suspected.]

37. Buds *pustulose*, pear-shaped, never glaucous; operculum cupular  $< \frac{1}{2}$  the length of calyx-tube; fruit *sessile*, hemispherical, 6-9 mm. wide; adult leaves narrow-lanceolate, *thick, shining*, with *obscure* venation (rare and slender subalpine shrub to 10 ft., flowering Nov.-Dec.; stems smooth, greenish,  $< 3''$  wide):

*E. kybeanensis* Maiden & Cabbage in *J. roy. Soc. N.S.W.* 48: 417 (1915).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 389 (1968); Flockton in Maiden, *Crit. Rev. Eucal.* 5: t. 191 fig. 3 a-d (1921).

*Vern.*: Ash-mallee. *Distr.*: SW—also N.S.W.

—Buds *not* pustulose; operculum at least  $\frac{1}{2}$  the length of calyx-tube; if adult leaves ever thick and shining, then venation *distinct*; never shrubs with trunks <3" wide 38

38. Fruits on *slender* pedicels; disk usually *very convex* and elevated; valves *long-exserted*; operculum *rostrate*, *longer* than calyx-tube (large smooth-barked trees, the juvenile leaves lanceolate and petiolate) 50

Fruit *not* combining the above features; operculum seldom longer than calyx-tube and, if so, then juvenile leaves  $\pm$  orbicular, highly glaucous and sessile 39

39. Young inflorescence without any common, deciduous "operculum"; fruits *not* broadly sessile congested and hemispherical or, if so, then operculum conical to rostrate and the adult leaves >4 times as long as broad 41

Young inflorescence covered by a *common* "operculum" (formed of coherent bracts, deciduous as a whole); buds and fruits *broadly sessile*, the latter tightly congested and hemispherical, forming a *globoid cluster*; operculum *hemispherical*; adult leaves <4 times as long as broad,  $\pm$  thick and shining 40

40. Juvenile and intermediate leaves  $\pm$  *glaucous*, on 4-angled stems, *highly aromatic*; peduncle 3-5 mm. long; buds  $\pm$  4 mm. long; fruit to 5 mm. wide (small compact endemic tree to 20 ft., rare, in N.E. mountain gullies; bark subfibrous and greyish on lower part of trunk, flaking away in *small tessellated fragments*, smooth and greenish above; flowers opening *Dec.-Jan.*);

*E. neglecta* Maiden in *Vict. Nat.* 21: 114 (1904).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 265 (1968); Kelly, *Eucalypts* t. 134, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 115 fig. 5 (1916); Ewart, *Handb. For. Trees* t. 132 (1925).

*Vern.*: Omeo Gum. *Distr.*: RSW.

—Leaves all *non-glaucous*; stems *not* manifestly angular; peduncle >5 mm. long; buds >5 mm. long; fruit 6-8 mm. wide:

*E. kitsoniana* Maiden. [See p. 424]

41. Fruit never funnel-shaped or, if slightly so, then juvenile leaves glaucous and the adult >5 times as long as broad 44

Fruit *funnel-shaped* or obconic, with straight sides and flat disk; leaves usually <5 times as long as broad (often ovate to broad-lanceolate); bark rough dark and subfibrous for varying distances up the trunk, mostly smooth and deciduous above 42

42. Pedicel *as long as* (or longer than) fruit; valves *strongly exserted* and erect (small to medium-sized spreading tree of colder flats in N.E. and

far E., the dull broad-ovate leaves often emarginate, flowering *March-Apr.*):

*E. camphora* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 24: 298, t. 22 (1899).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 212 (1968); Kelly, *Eucalypts* t. 107, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 115 fig. 1-4 (1916), as *E. ovata* var. *camphora*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 39 (1949); Ewart, *Handb. For. Trees* t. 133 (1925); Beuhne, *J. Dep. Agric. Vict.* 14: 247 (1916).

*Vern.*: Mountain Swamp Gum. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Pedicel *shorter than* fruit; valves *slightly exerted or enclosed*,  $\pm$  horizontal (small to large trees, in damp situations on and south of Dividing Range) 43

43. Intermediate leaves *obtuse*, often broadly elliptic,  $>2$  cm. wide, *glossy and  $\pm$  undulate*, with pronounced geranium-like scent and taste; bud  $>6$  mm. long, the operculum *much shorter than* combined calyx-tube and pedicel; fruit (with pedicel)  $>5$  mm. long (widespread tree, often flowering *March-Nov.*):

*E. ovata* Labill. *Nov. Holl. Plant. Specim.* 2: 13, t. 153 (1806).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 210 (1968); Kelly, *Eucalypts* t. 106, col. (1969); Costermans, *Trees Vict.* 23 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 113, t. 114 fig. 1, 3-11 (1916), and t. 89 fig. 10 (1914), the latter as *E. cinerea* var. *multiflora*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 37 (1949); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 97 (1957); Ewart, *Handb. For. Trees* t. 140 (1925).

*Vern.*: Swamp Gum. *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T.

[The var. *grandiflora* Maiden *Crit. Rev. Eucal.* 3: 146 (1916) has larger narrower leaves, longer buds and much larger fruits (8-10 mm. wide) than in the typical form; it occurs in the far south-east of South Australia and crosses the Victorian border east of Kalangadoo. A very large-budded form occurs at Moonlight Head near Cape Otway, but is not identical with var. *grandiflora*. A spreading tree, with consistently smaller leaves, smaller fruits (3-6 mm. long and broad) and rougher bark, was described by Maiden & Cabbage *l.c.* 6: 17 (1922) as *E. yarraënsis*, but its recognition at the specific level is debatable; this small tree is known to occur on wet flats along the Dandenong Creek, Upper Yarra and Barwon Rivers, at Ballarat and near the Grampians. *E. studleyensis* Maiden *l.c.* 6: 121 (1922), from Yarra Bend National Park, Melbourne, is an undoubted hybrid between *E. ovata* and *E. camaldulensis* Dehnh.]

—Intermediate leaves *acute*, lanceolate,  $<2$  cm. wide, *never* undulate; bud 5-6 mm. long, the operculum *almost as long as* combined calyx-tube and pedicel; fruit (with pedicel) 4-5 mm. long and wide (rare localized tree of Woodend district, rough-barked to the smaller branches, flowering ?*Dec.-Feb.*):

*E. aggregata* H. Deane & Maiden in *Proc. Linn. Soc. N.S.W.* 24: 614 (1899).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 215 (1968); Kelly, *Eucalypts* t. 108,

*col.* (1969); Carolan, *Vict. Nat.* 81: 117 (1964)—habit; Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 104 fig. 7-11 (1917), and 7: t. 283 fig. 5 (1929); Maiden, *For. Flor. N.S.W.* 8: t. 293 (1925).

*Vern.*: Black Gum. *Distr.*: N (Woodend)—also N.S.W.

44. Peduncles *terete* or, if slightly flattened, then the bark persistent to smaller branches and flowers distinctly pedicellate; buds *never angular*; juvenile stems  $\pm$  *terete* 46  
 Peduncles *manifestly flattened* and angular; buds  $\pm$  *angular* (often 1- to 4-costate); juvenile stems glaucous, *distinctly 4-angled* 45
45. Bark smooth, *deciduous in long ribbons*; peduncle *very flattened*, <4 times as long as broad; bud-length  $\pm$  twice the breadth; operculum often rugulose, hemispherical to broadly conical; disk *broad* and conspicuous; valve-teeth strongly arched, 2-3 mm. long (uncommon, medium to tall tree of Gippsland, flowering *Feb.-Sept.*):

*E. maidenii* F. Muell. in *Proc. Linn. Soc. N.S.W.* ser. 2, 4: 1020, tt. 28 & 29 (1890).

*Illust.*: Mueller (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 261 (1968); Kelly, *Eucalypts* t. 131, *col.* (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 79 fig. 13 & 14, and t. 80 fig. 1-6 (1913); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 30 (1949); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 103 (1957); Ewart, *Handb. For. Trees* t. 122 (1925).

*Vern.*: Maiden's Gum. *Distr.*: TWZ—also N.S.W.

[The var. *williamsonii* Blakely *Key Eucal.* 157 (1934), known only from Malla-coota township, differs in having flat-topped, strongly 1- or 2-costate fruits with narrow flange-like rim and depressed non-exserted valves; it is now regarded as an unusual natural hybrid between *E. pseudoglobulus* and *E. botryoides*. There is a possibility that even typical *E. maidenii* (in its type area between Eden and Braidwood, N.S.W.) may be one extreme of a hybrid swarm; indeed, F. v. Mueller has noted against an original collection: "perhaps a hybrid between *E. globulus* and *E. goniocalyx*". The few known Victorian occurrences, at present referred to this species, differ in having rather less glaucous buds with distinctly more rugulose opercula.]

—Bark as above; peduncle >4 times as long as broad; bud-length to 15 mm., >twice the breadth; operculum smooth, conical, often narrower than calyx-tube; fruit *shortly stalked*; disk *very narrow*; valve-teeth  $\pm$  enclosed, <2 mm. long (straight medium to tall tree widely distributed in mountain gullies, flowering *Feb.-July*):

*E. cypellocarpa* L. A. S. Johnson in *Contr. N.S.W. Herb.* 3: 114 (1962).

*E. goniocalyx* sens. Ewart *Flor. Vict.* 805 (1931) atque auctt. plur., non F. Muell. ex Miq. (1856).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 262 (1968); Kelly, *Eucalypts* t. 132, *col.* (1969); Costermans, *Trees Vict.* 24 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 81 fig. 1-8 (1913), as *E. goniocalyx*, and 2: t. 90 fig. 5 & 7 (1913), as *E. elæophora*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 109 (1957), as *E. goniocalyx*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 43,



62 (1949), as *E. goniocalyx*; Ewart, *Handb. For. Trees* t. 125 (1925), as *E. goniocalyx*.

Vern.: Mountain Grey Gum. Distr.: DJKNPRSTWZ—also N.S.W.

[The closely related Shining Gum (*E. nitens*) is included on p. 434.]

—Bark rough, scaly ("box" type), persistent to smaller branches; peduncle as in last; bud-length  $\pm$  twice the breadth; operculum smooth, broadly conical, as wide as calyx-tube; fruit sessile; disk narrow; valve-teeth enclosed to shortly exserted, <2 mm. long (widespread small to medium, often mis-shapen tree of poor rocky ground, flowering March-Aug.):

*E. goniocalyx* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 134 (1856).

*E. elaeophora* F. Muell. *Fragm. Phyt. Aust.* 4: 52 (1864).

Illust.: Chippendale, *Eucal. Buds & Fruits* fig. 229 (1968); Kelly, *Eucalypts* t. 115, col. (1969); Costermans, *Trees Vict.* 37 (1966); Maiden, *Crit. Rev. Eucal.* 2: t. 82 fig. 1, 2, 3 b-c, 4, 8-10, 13 & 16, also t. 83 fig. 3-9 (1913), and 8: t. 10 fig. 112 & 112a-114, col. (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 12 (1949); Ewart, *Handb. For. Trees* t. 127 (1925)—all but the first three as *E. elaeophora*.

Vern.: Bundy (Long-leaf Box). Distr.: CDEHJKMNPRSVW—also S.A., N.S.W., A.C.T.

[*E. cordieri* Trabut in *Bull. Sta. Rech. for., Alger.* 1: 140 (1917) is reputed to be a hybrid between *E. globulus* and *E. goniocalyx*; but the name was applied by Blakely in *Key Eucal.* 147 (1934) to populations of *E. goniocalyx* in northern Victoria having highly glaucous buds and fruits, the latter slightly larger than usual—L. A. S. Johnson, in *Contr. N.S.W. Herb.* 3: 112 (1962), has bestowed the name *E. nortonii* (Blakely) Johnson on these glaucous trees. In this State *E. goniocalyx* is suspected of hybridizing with *E. albens* Miq., *E. st-johnii*, *E. cypello-carpa* and *E. viminalis*.]

46. Juvenile leaves narrowed toward base (where soon petiolate), elliptical to narrow-oblong, slightly glaucous 48

Juvenile leaves broad at base (where cordate and stem-clasping), narrow-lanceolate, slightly or not at all glaucous 49

Juvenile leaves broad and cordate at base, orbicular to ovate, highly glaucous (bark rough and persistent at least to the major branches) 47

47. Bark spongy-fibrous ("stringybark" type); timber reddish; fruit sessile, in compact  $\pm$  globular heads; operculum glaucous, shorter than calyx-tube, acutely conical:

*E. cephalocarpa* Blakely. [See p. 421]

Bark hard, pale grey,  $\pm$  scaly ("box" type); timber pale; fruit manifestly pedicellate; operculum not glaucous, at least as long as calyx-tube conical to rostrate (medium to large spreading tree of E. & N.E. Victoria, flowering Jan.-May):

*E. bridgesiana* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 23: 164, t. 5 (1898).

*E. stuartiana* sens. Blakely *Key Eucal.* 145 (1934) atque Ewart *Flor. Vict.* 815 (1931) pro parte, non. F. Muell. ex Miq. (1856).

*Illust.*: Baker (*l.c.*); Kelly, *Eucalypts* t. 113, col. (1969); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 418, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 225 (1968); Costermans, *Trees Vict.* 38 (1966); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 99 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 18 (1949); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 101 fig. 2-3 & t. 102 fig. 2-4 (1915), as *E. stuartiana*, also 8: t. 10 fig. 102-103, col. (1931), as *E. stuartiana* (seedlings).

*Vern.*: But But (Apple Box). *Distr.*: RSTUVWZ—also N.S.W., A.C.T., Qd.

[East Gippsland populations, distinguished by Blakely (1934) as *E. angophoroides* R. T. Baker *l.c.* 25: 676 (1900), are almost certainly referable to *E. bridgesiana*.]

48. Bark spongy-fibrous, thick, *aromatic, persistent* to smaller branches, without palisade phelloderm tissue; timber pale (small to medium-sized spreading tree, chiefly on valley flats in W. districts; flowers opening *Jan.-Apr.*):

*E. aromaphloia* L. D. Pryor & J. H. Willis in *Vict. Nat.* 71: 125, t. 15 (1954).  
*E. stuartiana* sens. Ewart *Flor. Vict.* 815 (1931) *pro parte, non*  
F. Muell. ex Miq. 1856).

*Illust.*: Pryor & Willis (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 220 a (1968); Costermans, *Trees Vict.* 39 (1966); Kelly, *Eucalypts* t. 44, col. (1969), as *E. huberana*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 19 (1949), as *E. stuartiana*; Ewart, *Handb. For. Trees* t. 142, except juvenile leaves (1925), as *E. stuartiana*.  
*Vern.*: Scent-bark. *Distr.*: CDEJKNPZ—also ? S.A., N.S.W.

[In *Contr. N.S.W. Herb.* 3: 109 (1962) L. A. S. Johnson has introduced, as a distinct species, *E. corticosa* which would embrace the E. Gippsland and some Grampians material here included under *E. aromaphloia*. The new *E. corticosa* is said to differ in its narrower juvenile leaves, lustreless adult foliage and non-aromatic bark; but intermediate conditions occur freely, and the segregate is not accorded specific rank in this Key.

*E. aromaphloia* hybridizes extensively with *E. viminalis* and to a lesser degree with several other eucalypts.]

—Bark smooth, *white and deciduous* throughout, having palisade phello-derm tissue; timber reddish (small to medium tree of poor dryish hills, widespread in E. and N.E., flowering *Jan.-Apr.*):

*E. mannifera* Mudie in *Trans. med.-bot. Soc. Lond.* 3: 24 (1834).

*E. maculosa* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 24: 598, t. 44 (1900).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 233 (1968); Kelly, *Eucalypts* t. 111, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 109 fig. 11, 14 & 15, t. 110 fig. 1, t. 111 fig. 3 b-c & 4-7 (1916), all as *E. rubida*, also 3: t. 112 fig. 1-12 (1916) and 7: t. 278 fig. 2 (1927), both as *E. maculosa*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 36 (1949), as *E. maculosa*; Ewart, *Handb. For. Trees* t. 148 (1925), as *E. maculosa*.

*Vern.*: Brittle Gum. *Distr.*: DRSVWZ—also N.S.W., A.C.T.

[In the Wulgulmerang district and on Mt. Tingaringy, stunted mallee-like populations of this tree are to be found.]

62 (1949), as *E. goniocalyx*; Ewart, *Handb. For. Trees* t. 125 (1925), as *E. goniocalyx*.

*Vern.*: Mountain Grey Gum. *Distr.*: DJKNPRSTWZ—also N.S.W.

[The closely related Shining Gum (*E. nitens*) is included on p. 434.]

—Bark rough, scaly ("box" type), persistent to smaller branches; peduncle as in last; bud-length  $\pm$  twice the breadth; operculum smooth, broadly conical, as wide as calyx-tube; fruit sessile; disk narrow; valve-teeth enclosed to shortly exserted, <2 mm. long (widespread small to medium, often mis-shapen tree of poor rocky ground, flowering March-Aug.):

*E. goniocalyx* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 134 (1856).

*E. elaeophora* F. Muell. *Fragm. Phyt. Aust.* 4: 52 (1864).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 229 (1968); Kelly, *Eucalypts* t. 115, col. (1969); Costermans, *Trees Vict.* 37 (1966); Maiden, *Crit. Rev. Eucal.* 2: t. 82 fig. 1, 2, 3 b-c, 4, 8-10, 13 & 16, also t. 83 fig. 3-9 (1913), and 8: t. 10 fig. 112 & 112a-114, col. (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 12 (1949); Ewart, *Handb. For. Trees* t. 127 (1925)—all but the first three as *E. elaeophora*.

*Vern.*: Bundy (Long-leaf Box). *Distr.*: CDEHJKMNPRSVW—also S.A., N.S.W., A.C.T.

[*E. cordieri* Trabut in *Bull. Sta. Rech. for., Alger.* 1: 140 (1917) is reputed to be a hybrid between *E. globulus* and *E. goniocalyx*; but the name was applied by Blakely in *Key Eucal.* 147 (1934) to populations of *E. goniocalyx* in northern Victoria having highly glaucous buds and fruits, the latter slightly larger than usual—L. A. S. Johnson, in *Contr. N.S.W. Herb.* 3: 112 (1962), has bestowed the name *E. nortonii* (Blakely) Johnson on these glaucous trees. In this State *E. goniocalyx* is suspected of hybridizing with *E. albens* Miq., *E. st-johnii*, *E. cypellocarpa* and *E. viminalis*.]

46. Juvenile leaves narrowed toward base (where soon petiolate), elliptical to narrow-oblong, slightly glaucous 48

Juvenile leaves broad at base (where cordate and stem-clasping), narrow-lanceolate, slightly or not at all glaucous 49

Juvenile leaves broad and cordate at base, orbicular to ovate, highly glaucous (bark rough and persistent at least to the major branches) 47

47. Bark spongy-fibrous ("stringybark" type); timber reddish; fruit sessile, in compact  $\pm$  globular heads; operculum glaucous, shorter than calyx-tube, acutely conical:

*E. cephalocarpa* Blakely. [See p. 421]

Bark hard, pale grey,  $\pm$  scaly ("box" type); timber pale; fruit manifestly pedicellate; operculum not glaucous, at least as long as calyx-tube conical to rostrate (medium to large spreading tree of E. & N.E. Victoria, flowering Jan.-May):

*E. bridgesiana* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 23: 164, t. 5 (1898).

*E. stuartiana* sens. Blakely *Key Eucal.* 145 (1934) atque Ewart *Flor. Vict.* 815 (1931) pro parte, non. F. Muell. ex Miq. (1856).

*Illust.*: Baker (*l.c.*); Kelly, *Eucalypts* t. 113, col. (1969); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 418, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 225 (1968); Costermans, *Trees Vict.* 38 (1966); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 99 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 18 (1949); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 101 fig. 2-3 & t. 102 fig. 2-4 (1915), as *E. stuartiana*, also 8: t. 10 fig. 102-103, col. (1931), as *E. stuartiana* (seedlings).

*Vern.*: But But (Apple Box). *Distr.*: RSTUVWZ—also N.S.W., A.C.T., Qd.

[East Gippsland populations, distinguished by Blakely (1934) as *E. angophoroides* R. T. Baker *l.c.* 25: 676 (1900), are almost certainly referable to *E. bridgesiana*.]

48. Bark spongy-fibrous, thick, *aromatic, persistent* to smaller branches, without palisade phelloderm tissue; timber pale (small to medium-sized spreading tree, chiefly on valley flats in W. districts; flowers opening *Jan.-Apr.*):

*E. aromaphloia* L. D. Pryor & J. H. Willis in *Vict. Nat.* 71: 125, t. 15 (1954).  
*E. stuartiana* sens. Ewart *Flor. Vict.* 815 (1931) *pro parte, non*  
F. Muell. ex Miq. 1856).

*Illust.*: Pryor & Willis (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 220 a (1968); Costermans, *Trees Vict.* 39 (1966); Kelly, *Eucalypts* t. 44, col. (1969), as *E. huberana*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 19 (1949), as *E. stuartiana*; Ewart, *Handb. For. Trees* t. 142, except juvenile leaves (1925), as *E. stuartiana*.  
*Vern.*: Scent-bark. *Distr.*: CDEJKNPZ—also ? S.A., N.S.W.

[In *Contr. N.S.W. Herb.* 3: 109 (1962) L. A. S. Johnson has introduced, as a distinct species, *E. corticosa* which would embrace the E. Gippsland and some Grampians material here included under *E. aromaphloia*. The new *E. corticosa* is said to differ in its narrower juvenile leaves, lustreless adult foliage and non-aromatic bark; but intermediate conditions occur freely, and the segregate is not accorded specific rank in this Key.

*E. aromaphloia* hybridizes extensively with *E. viminalis* and to a lesser degree with several other eucalypts.]

—Bark smooth, *white and deciduous* throughout, having palisade phello-derm tissue; timber reddish (small to medium tree of poor dryish hills, widespread in E. and N.E., flowering *Jan.-Apr.*):

*E. mannifera* Mudie in *Trans. med.-bot. Soc. Lond.* 3: 24 (1834).

*E. maculosa* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 24: 598, t. 44 (1900).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 233 (1968); Kelly, *Eucalypts* t. 111, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 3: t. 109 fig. 11, 14 & 15, t. 110 fig. 1, t. 111 fig. 3 b-c & 4-7 (1916), all as *E. rubida*, also 3: t. 112 fig. 1-12 (1916) and 7: t. 278 fig. 2 (1927), both as *E. maculosa*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 36 (1949), as *E. maculosa*; Ewart, *Handb. For. Trees* t. 148 (1925), as *E. maculosa*.

*Vern.*: Brittle Gum. *Distr.*: DRSVWZ—also N.S.W., A.C.T.

[In the Wulgulmerang district and on Mt. Tingaringy, stunted mallee-like populations of this tree are to be found.]

49. Juvenile leaves (and stems)  $\pm$  *glaucous*; bark rough, dark and deeply furrowed on butt, smooth white and *deciduous on upper part* of trunk and branches; operculum *conical* (medium to tall forest tree in far E. Victoria, flowering Jan.-March):

*E. smithii* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 24: 292, t. 20 (1899).

*Illust.*: Baker (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 274 (1968); Kelly, *Eucalypts* t. 137, col. (1969); Beuhne, *J. Dep. Agric. Vict.* 14: 481 (1916); King in Maiden, *For. Flor. N.S.W.* 7: t. 265 fig. E-H (1922); Maiden, *Crit. Rev. Eucal.* 2: t. 55 fig. 1 & 2 (1908), and 8: t. 6 fig. 58, col. (1930); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 35 (1949); Ewart, *Handb. For. Trees* t. 141 (1925).

*Vern.*: Gully Gum. *Distr.*: WZ—also N.S.W.

—Juvenile leaves *bright pale green*, never glaucous; bark thick, subfibrous, *persisting to the branches*; operculum  $\pm$  hemispherical (small irregular tree of sandy heaths in central coastal region):

*E. viminalis* Labill. var. *racemosa* F. Muell. ex Maiden. [See p. 420]

50. Operculum *hemispherical* in lower half, then *contracting suddenly* into a conical, acuminate beak,  $<2\frac{1}{2}$  times as long as calyx-tube; disk always convex and *elevated*; juvenile leaves usually  $<2$ " wide (tree of water-courses and flats almost throughout State, excepting E. Gippsland and highlands, flowering Nov.-March):

*E. camaldulensis* Dehnh. *Cat. Plant. Hort. Camald.* ed. 2: 20 (1832).

*E. rostrata* Schlechtendal in *Linnaea* 20: 655 (1847), non Cav. (1797).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 197 (1968); Kelly, *Eucalypts* t. 102, col. (1969); Costermans, *Trees Vict.* 19 (1966); Maiden, *Crit. Rev. Eucal.* 4: t. 136 fig. 1-10 & t. 137, fig. 1-18 (1917), as *E. rostrata*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 21 col., 87 & 93 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 21 & 29 (1949), as *E. rostrata*; Ewart, *Handb. For. Trees* t. 147 (1925), as *E. tereticornis* var. *rostrata*; Black, *Flor. S. Aust.* ed. 2: fig. 818 M & 842 (1952).

*Vern.*: River Red Gum. *Distr.*: ABCDEFHJKLMNPQRSTUVWXYZ—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[As remarked by Ewart, *Flor. Vict.* 821 (1931), the distinction between Victorian populations of this species and of *E. tereticornis* is trifling, being almost solely in the size and shape of operculum; but, in deference to many other botanists and foresters who evince a "general reluctance to suppress either species", both are retained at the specific level here—Ewart, in his *Handb. For. Trees* 301 (1925), had previously reduced *E. camaldulensis* to a variety *rostrata* of *E. tereticornis*. Where ranges of the two entities overlap, e.g. in Sale district, intermediate states occur and may be the result of hybridism. The juvenile and intermediate leaves of *E. camaldulensis*, as it grows along the Murray Valley, are usually *narrow-linear* and very long, departing much farther from the foliage of the same species around Port Phillip than the latter form does from fairly typical examples of *E. tereticornis* in the Bairnsdale-Lakes Entrance region. The Victorian hybrids *E. camaldulensis*  $\times$  *E. viminalis* and *E. camaldulensis*  $\times$  *E. ovata* (= *E. studleyensis* Maiden) have been verified by progeny tests. *E. oxypoma* Blakely is now considered to be a natural

hybrid between *E. camaldulensis* and *E. largiflorens*—see note under the latter species, p. 442.]

—Operculum *narrowly and evenly conical* (shaped like a “dunce-cap”), acuminate to subobtusate; disk sometimes flattened (flowering Aug.-Jan.) 51

51. Adult leaves usually 7-12 times as long as broad; operculum 2-4 times as long as calyx-tube; fruit usually 7-9 mm. wide (tall tree of East Gippsland plains):

*E. tereticornis* Sm. *Specim. Bot. New Holl.* 41 (1795).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 178 (1968); Kelly, *Eucalypts* t. 95, col. (1969); Costermans, *Trees Vict.* 20 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 4: t. 128 (1920); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 89 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 22 (1949); Ewart, *Handb. For. Trees* t. 146 (1925); Flockton in Maiden, *For. Flor. N.S.W.* 2: t. 41 (1906).

*Vern.*: Forest Red Gum. *Distr.*: STWX—also N.S.W., Qd, extending to N.G.

[*E. oviformis* Maiden & Blakely *Crit. Rev. Eucal.* 8: 32 (1929), known only from Metung on the Gippsland Lakes, appears to be an *E. tereticornis* × *E. pseudo-globulus* hybrid much more resembling the former parent.]

—Adult leaves usually 5-7 times as long as broad; operculum usually only up to 1½ times as long as calyx-tube; fruit usually 5-7 mm. wide (medium tree of N. & N.E. Victoria, often on stony slopes):

*E. blakelyi* Maiden *Crit. Rev. Eucal.* 4: 43 (1917).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 186 (1968); Kelly, *Eucalypts* t. 96, col. (1969); Maiden, *Crit. Rev. Eucal.* 4: t. 133 fig. 2-5, and t. 134 fig. 2 (1917); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 91 (1957).

*Vern.*: Blakely's Red Gum. *Distr.*: HRUVW—also N.S.W., A.C.T., Qd.

52. Buds and fruits distinctly and regularly 4-angled, the latter 7-10 mm. long (mallees of the inland, with thick lustrous leaves) 75  
Buds and fruits not (or only obscurely) 4-angled 53
53. Flowers numerous, in distinct axillary or terminal *panicles*; valves of fruit *deeply enclosed*, the disk thin and oblique; anthers 0.3 mm. long or less, opening by terminal pores (chiefly boxes and mallees) 69  
Flowers in simple axillary *umbels* (the subtending leaves sometimes rudimentary or early deciduous) 54
54. Juvenile leaves opposite for only 3-5 pairs, *never* stem-clasping, usually petiolate, neither crenulate nor peppermint-scented (box and mallee eucalypts) 58  
Juvenile leaves opposite for many pairs, often on quadrangular shoots, *stem-clasping* and usually sessile (trees, never of mallee habit) 55
55. Leaves entire, not peppermint-scented; young shoots *quadrangular*; operculum *conical*; fruit often sessile, 5-10 mm. wide 57  
Leaves crenulate or with strong peppermint aroma; young shoots *never* 4-angled; operculum *hemispherical* and ± *apiculate*; fruit pedicellate, <5 mm. wide 56

56. Adult leaves *entire*, *alternate*, non-glaucous, *narrow-lanceolate*, *peppermint-scented*; umbel >10-flowered; operculum minutely apiculate; filaments white:

*E. elata* Dehnh. [See p. 425]

- Adult leaves *crenulate* on margins,  $\pm$  *opposite*, *glaucous beneath*, *cordate* at base, *orbicular to ovate lanceolate*; umbel 4- to 8-flowered; operculum *rostrate*; filaments yellowish (very rare small, spreading *glaucous tree* to 30 ft., endemic to swampy river flats in S.-Cent. Victoria, flowering *Sept.-Nov.*):

*E. crenulata* Blakely and de Beuzeville in *Contr. N.S.W. Herb.* 1: 37 (1939).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 244 a (1968); Kelly, *Eucalypts* t. 124, col. (1969).

*Vern.*: Buxton Gum (Silver Gum). *Distr.*: NS (Yering & Buxton respectively).

57. Bark rough and persistent to smaller branches; bud-length  $\pm$  twice the breadth; fruit sessile, 7-10 mm. wide (medium spreading tree):

*E. goniocalyx* F. Muell. ex Miq. [See p. 430]

- Bark smooth, deciduous in ribbons; bud-length >twice the breadth;  
—fruit  $\pm$  stalked, 7-10 mm. wide (tall straight tree to 150 ft.):

*E. cypellocarpa* L. A. S. Johnson. [See p. 429]

- Bark smooth, deciduous in ribbons; bud-length  $\pm$  twice the breadth;  
fruit sessile, <7 mm. wide, *highly lustrous* (very tall straight tree to 300 ft., on subalpine slopes of E. highlands, flowering *Jan.-March*):

*E. nitens* (H. Deane & Maiden) Maiden *Crit. Rev. Eucal.* 2: 272, t. 81 fig. 9-10 ut *E. goniocalyx* var. *nitens* (1913).

*E. goniocalyx* F. Muell. var. *nitens* H. Deane & Maiden in *Proc. Linn. Soc. N.S.W.* 24: 463 (1899).

*Illust.*: Flockton in Maiden (*l.c.*); Chippendale, *Eucal. Buds & Fruits* fig. 263 (1968); Costermans, *Trees Vict.* 25 (1966); King in Maiden, *For. Flor. N.S.W.* 8: t. 281 (1925); Ewart, *Handb. For. Trees* t. 126 (1925).

*Vern.*: Shining Gum. *Distr.*: SWZ—also N.S.W.

58. Small trees (<30 ft.) to “whipstick” mallees of north-western Victoria (except one rare alpine mallee from Mt. Wellington); leaves often *lustrous* and with *hooked* tips; fruit *never* glaucous, if both slender-stalked and with deeply enclosed valves then *not* hemispherical to pilular.

60

Medium to very tall trees of eastern and/or western Victoria; bark scaly (“box” type) and persistent over whole or lower part of trunk; leaves usually dull, straight at apex; fruit with valves deeply enclosed, *glaucous or* slender-stalked and hemispherical; anthers minute, <0.3 mm. long, opening by terminal pores or short slits

59

59. Adult and juvenile leaves *very glaucous*, thick, coriaceous, both >1” wide; buds angular, 10-15 mm. long; fruits *glaucous*, *cylindroid*,

*sessile* or almost so, 10-12 × 6-8 mm. (spreading whitish tree of drier E. & N.E. hills, flowering Feb.-June):

*E. albens* Benth. *Flor. aust.* 3: 219 (1867)—*non* Miq. (1856).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 486 (1968); Kelly, *Eucalypts* t. 199, col. (1969); Willis, *Vict. Nat.* 65: 192 (1948), as *E. hemiphloia* var. *albens*; Maiden, *Crit. Rev. Eucal.* 2: t. 50 fig. 18-22, & t. 51 fig. 1-8 (1910), as *E. hemiphloia* var. *albens*, also 8: t. 9 fig. 92-95, col. (1933).

*Vern.*: White Box. *Distr.*: HMRTVWZ—also S.A., N.S.W., A.C.T., Qd.

[The name "*E. albens* Miq." has no nomenclatural standing, being an orthographic error for *E. pallens* DC. (1828) which is generally regarded as synonymous with *E. obliqua* L'Hér. (1788). Miss N. T. Burbidge in *Trans. roy. Soc. S. Aust.* 71: 161 (1947) has followed Maiden, *Crit. Rev. Eucal.* 2: 20 (1910), in reducing *E. albens* Benth. to varietal rank under *E. hemiphloia* F. Muell. ex Benth.; but this treatment is unacceptable to the majority of Australian botanists.]

—Adult and juvenile leaves *not* or only slightly glaucous, dull, rather thin, finely veined, about 1" wide or less; buds <8 mm. long; operculum *shorter* than calyx-tube; fruit non-glaucous, ± hemispherical, *slenderly pedicellate*, 4-7 mm. long and wide, often bearing remains of the broad staminal ring; anthers *oblique* on filaments, cuneate-truncate, those of outer stamens *absent or abortive* (medium to tall tree with spreading crown and often ± pendulous branches, widespread through State but not in Mallee, flowering Oct.-Feb.):

*E. melliodora* A. Cunn. ex Schauer in Walp. *Repert. Bot. Syst.* 2: 924 (1843).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 327, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 550 (1968); Kelly, *Eucalypts* t. 215, col. (1969); Costermans, *Trees Vict.* 33 (1966); Maiden, *Crit. Rev. Eucal.* 2: t. 61 fig. 1-14 (1912), also 6: t. 216 fig. 3 (1922) and 8: t. 8 fig. 83 & 84, col. (1930); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 165 (1957); Ewart, *Handb. For. Trees* t. 171 (1925).

*Vern.*: Yellow Box. *Distr.*: CDEHJMNPRSVW—also N.S.W., A.C.T., Qd.

—As for the last, but a small tree or *mallee* of N.W. Victoria, juvenile leaves to 2" wide, adult leaves *bright green* with *prominent coarse venation* and anthers of *all* the filaments functional (flowers opening May-Nov.):

*E. porosa* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 132 (1856).

*E. odorata* sens. Ewart *Flor. Vict.* 852 (1931), *non* Behr & Schlechtendal (1847);

*E. calcicultrix* (F. Muell. ex Miq., ut *E. odorata* var.) Blakely *Key Eucal.* 224 (1934).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 451 (1968); Kelly, *Eucalypts* t. 186, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 51 fig. 23, 24 a & 25 a (1910), as *E. odorata* var. *calcultrix*; Burbidge, *Trans. roy. Soc. S. Aust.* 71<sup>a</sup>: t. 1 fig. 7 (1947); as *E. calcicultrix*.

*Vern.*: Black Mallee Box. *Distr.*: ABC—also S.A., N.S.W. (far south-west).



—As for *E. melliodora*, but juvenile leaves to 2" wide, buds 8-10 mm. long, operculum as long as calyx-tube and anthers of all the filaments functional (tall straight tree of E. Gippsland, sometimes attaining 150 ft., flowering Nov.-March):

*E. bosistoana* F. Muell. in *Aust. J. Pharm.* 10: 293 (1895).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 479 (1968); Kelly, *Eucalypts* t. 194, col. (1969); Costermans, *Trees Vict.* 35 (1966); Maiden, *Crit. Rev. Eucal.* 2: t. 49 fig. 1-4 (1910), and 6: t. 231 fig. 1 (1922); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 161 (1957); Ewart, *Handb. For. Trees* t. 154 (1925).

*Vern.*: Coast Grey Box (Gippsland Grey Box). *Distr.*: WXZ—also N.S.W.

60. Fruits 5-8 mm. long and wide, *hemispherical to pilular* on conspicuous pedicels, never urceolate, either with long-exserted subulate valves or the buds manifestly wrinkled, but never striate (bark rough and persistent at least toward base of trunk) 67

Fruit *longer than broad*; if ever isodiametric and strongly pedicellate, then either urceolate, vertically striated or <5 mm. wide; valves never long-exserted; buds not conspicuously wrinkled 61

61. Average adult leaf <15 mm. wide (usually <10 mm.); fruit 5 mm. wide or less, distinctly stalked; anthers minute (<0.3 mm. long), opening by *terminal pores* 63

Average adult leaf <10 mm. wide; fruit >6 mm. wide (and >7 mm. long), stalked, ovoid to urceolate; operculum hemispherical to conic, much shorter than calyx-tube; anthers reniform,  $\pm$  0.5 mm. wide, opening by *slits* (rare many-stemmed alpine mallee to 12 ft., flowering Dec.-Apr.):

*E. stricta* Sieber ex Spreng. *Syst.* 4<sup>2</sup>: 195 (1827).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 384 (1968); Kelly, *Eucalypts* t. 167, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 43 fig. 12-15 (1907), as *E. virgata* var. *stricta*; Maiden, *Agric. Gaz. N.S.W.* 12: 667 (1901); Mueller, *Eucalyptographia* Dec. 10 (1884).

*Vern.*: Mountain Mallee. *Distr.*: S (Mt. Wellington)—also N.S.W.

[*E. stricta* is not known to occur in N.S.W. south of Braidwood district, and the single Victorian occurrence on Mt. Wellington, 230 miles to the S.W., is remarkably disjunct.]

—Average adult leaf 15 mm. wide or more, very coriaceous; fruit >5 mm. wide, sometimes  $\pm$  sessile; anthers  $\pm$  1 mm. long, opening by *parallel slits* (N.W. Mallee) 62

62. Fruit 10 mm. long or more, >8 mm. wide, often distinctly ribbed and *urceolate*; valves broadly *triangular, short-pointed*; operculum as long as calyx-tube, conical to rostrate (flowers opening Oct.-Apr., chiefly Oct.-Dec.):

*E. incrassata* Labill. *Nov. Holl. Plant. Specim.* 2: 12, t. 150 (1806).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 136 (1968); Kelly, *Eucalypts* t. 67, col. (1969); Costermans, *Trees Vict.* 60 (1966); Cochrane, Fuhrer, Rotherham

& Willis, *Flowers & Plants Vict.* t. 157, col. (1968)—var. *costata*; Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 13 fig. 1-4 (1904); Black, *Flor. S. Aust.* ed. 2: fig. 850 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 85 (1949); Ewart, *Handb. For. Trees* t. 129 (1925)—various forms.

*Vern.*: Yellow Mallee. *Distr.*: ABCG—also W.A., S.A.

[The form of *E. incrassata* most usual on Victorian Mallee sand-hills is var. *costata* (Behr. & F. Muell. ex Miq., *ut sp.*) N. T. Burbidge in *Trans. roy. Soc. S. Aust.* 71: 150 (1947), distinguished by its larger, more cylindrical fruits (10-18 × 9-12 mm.) with definite ribbing in the dried state, and in the more flattened peduncles; however, it grades into the smoother typical form on one hand, and into the even coarser var. *angulosa* (Schauer) Benth. on the other. The var. *angulosa* (recognized as a species by Blakely, 1934), with strongly ribbed fruits to 25 mm. long, is restricted to western South Australia and West. Australia. Populations intermediate between *E. incrassata* and *E. dumosa* have been noted in Victoria, and hybridism is suspected.]

—Fruit <10 mm. long, 8 mm. wide or less, very shortly stalked or sessile, never urceolate; valves *narrow* with  $\pm$  *subulate* points; operculum *much shorter than calyx-tube*, but *no wider* than it, in the living state smooth or only faintly striated (flowers opening *Oct.-May*, but usually in *Jan.-Feb.*):

*E. dumosa* A. Cunn. ex Schauer in *Walp. Repert. Bot. syst.* 2: 925 (1843).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* 38 fig. 3 n. 261 (1965); Chippendale, *Eucal. Buds & Fruits* fig. 141 (1968); Kelly, *Eucalypts* t. 71, col. (1969); Costermans, *Trees Vict.* 61 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 15 fig. 8, t. 16 fig. 1-5, & t. 19 fig. 1 (1904), all as *E. incrassata*; Black, *Flor. S. Aust.* ed. 2: fig. 849 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 85 (1949).

*Vern.*: Dumosa Mallee. *Distr.*: ABCFG—also S.A., N.S.W.

—As for the last, but operculum almost *as long as calyx-tube* and usually *wider* than it, hemispherical with short beak, *radially striated or ribbed* when alive or dried (adult leaves very thick and often as glaucous as the juvenile, giving trees a silvery aspect; flowers opening *Nov.-Jan.*):

*E. pileata* Blakely *Key Eucal.* 120 (1934).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 146 (1968); Kelly, *Eucalypts* t. 74, col. (1969); Black, *Flor. S. Aust.* ed. 2: fig. 846 (1952); Gardner, *J. Dep. Agric. W. Aust.* ser. 4, 1<sup>st</sup>: 450 (1960); Burbidge, *Trans. roy. Soc. S. Aust.* 71<sup>st</sup>: t. 3 fig. 11 (1947).

*Vern.*: Capped Mallee. *Distr.*: A (border S.W. of Morkalla)—also W.A., S.A.

[In their *Classific. Eucal.* 47 & 85 (1971), Pryor & Johnson have relegated this taxon to subspecific rank under *E. dumosa*.]

63. Buds and pedicels  $\pm$  *angular*, the latter very slender; operculum *much shorter than calyx-tube*, hemispherical or shallow (shaped like a skull-cap); outer stamens longer than the inner and *without anthers* (flowers opening *Apr.-Sept.*, sometimes as late as *Nov.*):

*E. gracilis* F. Muell. in *Trans. Vict. Inst.* 35 (1855).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 178, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 564 (1968); Kelly, *Eucalypts* t. 223, col. (1969); Garnet, *Vegetation Wyperfeld Nat. Park* 37 fig. 2 n. 262 (1965); Costermans, *Trees Vict.* 60 (1966); Maiden, *Crit. Rev. Eucal.* 7: t. 268 fig. 6 (1926) and 8: t. 11, fig. 127-129, col. (1931), as *E. gracilis*, also 1: t. 11 fig. A & B (1904), as *E. calycogona*, and t. 12 (1903) as *E. calycogona* var. *gracilis*; Black, *Flor. S. Aust.* ed. 2: fig. 832 (1952); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 82 (1949).

*Vern.*: Yorrell (White Mallee). *Distr.*: ABCFG—also W.A., S.A., N.S.W.

[Populations having more distinctly 4-angled fruits are frequent in the "Sunset Country" (far N.W. Mallee) and may be indicative of past interbreeding with *E. calycogona*, which has longer, strongly quadrangular,  $\pm$  urceolate capsules. A putative hybrid with *E. largiflorens* is mentioned under that species (q.v. p. 442).]

—Buds *not* angular or, if so, the pedicels short; operculum hemispherical to broadly conical, almost *as long as* calyx-tube; outer stamens no longer than inner and *all fertile* 64

64. Disk of fruit forming a narrow but distinct  $\pm$  *flattened rim* inside the *deeply recessed* staminal ring; valves almost reaching the *very narrow* orifice (1-2 mm. wide); young branchlets hardly angular, usually bright red and shining (flowers opening *Nov.-March*, chiefly *Jan.-Feb.*):

*E. fœcunda* Schauer in *Lehm. Plant. Preiss.* 1: 130 (1844).

*E. uncinata* sens. Ewart *Flor. Vict.* 841 (1931) et al., non Turcz. (1849);

*E. leptophylla* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 123 (1856).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 442 (1968); Kelly, *Eucalypts* t. 181, col. (1969); Costermans, *Trees Vict.* 61 (1966); Maiden, *Crit. Rev. Eucal.* 1: t. 19 fig. 2 & 3 (as forms between *E. incrassata* & *E. fœcunda*), t. 21 fig. 4, t. 22 fig. 1 & 2 (1904), and 6: t. 229 fig. 1 & 2 (1922) as *E. leptophylla*, also 2: t. 62 fig. 5, 6, 8, 13 & 16-20 (1912) as *E. uncinata*, and 8: t. 12 fig. 136-139, col. (1931) as *E. leptophylla*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 81 (1949), as *E. uncinata*; Black, *Flor. S. Aust.* ed. 2: fig. 818 D & 830 (1952), as *E. leptophylla*; Ewart, *Handb. For. Trees* t. 157 (1925), as *E. uncinata*.

*Vern.*: Slender-leaf Mallee. *Distr.*: ABCFG—also W.A., S.A.

—Disk of fruit *obscure*, *internal* and hidden by staminal ring; valves *deeply enclosed*; orifice > 2 mm. wide; young branchlets  $\pm$  4-angled 65

65. Adult leaves *shining*, *dark green*, *narrow-linear*, the average width < 8 mm.; buds *never* glaucous (sometimes small trees with rough scaly bark on lower part of trunk; flowering time irregular, usually *Nov.-Jan.*, but sometimes in winter):

*E. viridis* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 25: 316, t. 19 (1900).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 465 (1968); Kelly, *Eucalypts* t. 190, col. (1969); Costermans, *Trees Vict.* 60 (1966); Garnet, *Vegetation Wypedrfel Nat. Park* 39 fig. 4 n. 268 (1965); Flockton in Maiden, *Crit. Rev. Eucal.* 2:

t. 52 fig. 9-12 (1910), as *E. acacioides*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 89 (1949); Ewart, *Handb. For. Trees* t. 160 (1925).

*Vern.*: Green Mallee. *Distr.*: CHM—also S.A., N.S.W., Qd.

[A form on the Lawloit Range, between Nhill & Kaniva, has the leaves broader (to 15 mm.) and fruits relatively larger.]

- Adult leaves *dull*, often  $\pm$  glaucous, *narrow-lanceolate*, the average width  $>8$  mm.; buds sometimes glaucous (flowering *March-Sept.*) 66.  
66. Buds  $7-9 \times 4-5$  mm., the operculum *broadly conical* at anthesis (*rough-barked* trees 20-40 ft. tall, with little or no glaucescence, rare and apparently now restricted to Avoca & Kanya-Bolangum districts):

*E. odorata* Behr ex Schlechtendal in *Linnaea* 20: 547, 657 (1847).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 455 (1968); Kelly, *Eucalypts* t. 188, col. (1969); Black, *Flor. S. Aust.* ed. 2: fig. 827 (1952); Maiden, *Crit. Rev. Eucal.* 2: t. 51 fig. 9-15, 18 & 19 (1910), 5: t. 194 fig. 3-4 (1921), the latter as *E. woollsiana*, also 8: t. 9 fig. 88 & 89, col. (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 16 (1949); Ewart, *Handb. For. Trees* t. 159 (1925).

*Vern.*: Peppermint Box. *Distr.*: HJ—also S.A.

- Buds  $5-7 \times 3-4$  mm., the operculum *hemispherical & obtuse* (slender, usually glaucous mallees with *smooth, ribbony bark*, chiefly in Whipstick Scrub near Bendigo, Inglewood & Wychitella areas):

*E. polybractea* R. T. Baker in *Proc. Linn. Soc. N.S.W.* 25: 692 (1900).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 464 (1968), as *E. fruticetorum*; Kelly, *Eucalypts* t. 189, col. (1969), as *E. fruticetorum*; Maiden, *Crit. Rev. Eucal.* 1: t. 11 fig. G & H (1903), as *E. calycogona*, 2: t. 52 fig. 1-8 (1910), and 8: t. 7 fig. 65-69, col. (1930) as *E. fruticetorum*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 87 (1949); Ewart, *Handb. For. Trees* t. 158 (1925).

*Vern.*: Blue Mallee. *Distr.*: CHM—also N.S.W.

[There is no uncertainty about the correct application of this name; but sundry authors have referred Victorian goldfields populations variously to *E. fruticetorum* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 131 (1856) and *E. odorata* var. *angustifolia* Blakely *Key Eucal.* 226 (1934), the types of which came from South Australia. The present writer, however, is not convinced that the Blue Mallee in Victoria is identical with any natural occurrence west of the S.A. border, and prefers to retain Baker's later binomial.]

The Victorian endemic *E. blackburniana* Maiden *Crit. Rev. Eucal.* 6: 120 (1922), the "Ironbark Box" recorded for Inglewood and Nhill districts, is reputed to be a natural hybrid having *E. odorata* as one parent; the Inglewood example shows definite affinities with *E. polybractea*, and its larger longer-pedicellate fruit suggests *E. sideroxylon* influence.]

67. Leaves with *marked*, irregular venation, the intramarginal vein *distant* from edge; umbel 4- to 7-flowered; operculum *shorter* than calyx-tube and *very wrinkled*; valves *enclosed*:

*E. porosa* F. Muell. ex Miq. [See p. 435]

- Leaves with *obscure* venation, the intramarginal vein *close* to edge; umbel with 6-12 slender-stalked flowers; operculum *as long as* or longer than calyx-tube, obtuse to rostrate; valves subulate, long-exserted, but breaking easily and often lacking from older fruits (stunted to tall mallees; flowering time irregular, but usually *March-July*) 68
68. Leaves *shining green*, usually narrow (<2 cm. wide); operculum *blunt*, <5 mm. long:

*E. oleosa* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 127 (1856).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 578 (1968); Kelly, *Eucalypts* t. 229 col. (1969); Garnet, *Vegetation Wyperfeld Nat. Park* 38 fig. 3 n. 267 (1965); Costermans, *Trees Vict.* 61 (1966); Black, *Flor. S. Aust.* ed. 2: fig. 818 E & 836 (1952); Maiden, *Crit. Rev. Eucal.* 2: t. 65 fig. 2, 4 f-h, 6-9, 11 & 12, t. 66 fig. 3 (1912), and 1: t. 19 fig. 5 (as a form connecting *E. oleosa* and *E. fecunda*), t. 22 fig. 3 & 4 (1904) as *E. fecunda*, and 8: t. 11 fig. 130-132, col. (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 84 (1949); Ewart, *Handb. For. Trees* t. 130 (1925); Gardner, *J. Dep. Agric. W. Aust.* ser. 3, 2: 408 & 410-11 (1953).

*Vern.*: Acorn Mallee (Oil Mallee). *Distr.*: ABCFG—also W.A., S.A., N.S.W.

—Leaves *dull*, often  $\pm$  glaucous, often 2 cm. wide or more; operculum *rostrate*, 5 mm. long or more:

*E. socialis* F. Muell. ex Miq. *Ned. kruidk. Arch.* 4: 132 (1856).

*E. oleosa* F. Muell. ex Miq. var. *glauc*a sens. Ewart *Flor. Vict.* 814 (1931), non Maiden in *J. nat. Hist. Soc. W. Aust.* 3: 171 (1911).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 573 (1968); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 65 fig. 4 & 17—latter from type of *E. socialis* (1912), as *E. oleosa*; Burbidge, *Trans. roy. Soc. S. Aust.* 71<sup>a</sup>: t. 4 fig. 1 (1947), as *E. oleosa* var. *glauc*a.

*Vern.*: Grey Mallee (Christmas Mallee). *Distr.*: ABCFG—also S.A., N.S.W.

[The var. *glauc*a Maiden (*l.c.*) is strictly referable to *E. transcontinentalis* Maiden *E. J. roy. Soc. N.S.W.* 53: 58 (1919)—a taller highly glaucous tree of the Eastern Goldfields in W.A., having yellow flowers that open in late spring. *E. oleosa* and in *socialis* appear to be connected by intermediate populations in some parts of N.W. Victoria.]

69. Operculum *narrower than* top of calyx-tube, *broadly conical*, 2-3 mm. long, subglaucous; fruit often cylindroid, usually 6-8 mm. long (medium-sized tree with *smooth*, white or pinkish, deciduous bark and dull lanceolate leaves to 6" long, confined in Victoria to vicinity of South Australian border near Dergholm and in Little Desert; flowers opening *Sept.-Dec.*, but autumn in parts of S.A.):

*E. fasciculosa* F. Muell. in *Trans. Vict. Inst.* 34 (1855).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 560 (1968); Kelly, *Eucalypts* t. 220, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 61 fig. 15-17 (1912);

Ewart, *Handb. For. Trees* t. 150 (1925); Black, *Flor. S. Aust.* ed. 2: fig. 834 (1952); Burbidge, *Trans. roy. Soc. S. Aust.* 71<sup>2</sup>: t. 1 fig. 6 (1947).

*Vern.*: Pink Gum. *Distr.*: CD—also S.A.

- Operculum *as wide as* top of calyx-tube, *conical-rostrate*,  $\pm$  angular 5 mm. long or more, *highly glaucous*; fruit equally glaucous, *cylindroid*, 9-11 mm. long (bark of “box” type, *scaly*, persistent, pallid):

*E. albens* Benth. [See p. 435]

- Operculum *as wide as* top of calyx-tube, if ever glaucous then <5 mm. long; fruit *hemispherical to barrel-shaped* 70

70. Operculum  $\pm$  *angular*, 4-6 mm. long (equal to length of calyx-tube), conical to rostrate; fruit shortly pedicellate to sessile, 5-7  $\times$  3-5 mm. (medium to large spreading tree with *scaly*, persistent, greyish “box” bark on trunk and smooth deciduous bark on branches, widespread on plains and low dry hills but absent from Gippsland, flowering Feb.-July but chiefly March-May):

*E. microcarpa* (Maiden) Maiden *Crit. Rev. Eucal.* 6: 438 (1923).

*E. hemiphloia* F. Muell. ex Benth. var. *microcarpa* Maiden *Crit. Rev. Eucal.* 2: 17 (1910).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 483 (1968); Kelly, *Eucalypts* t. 197, col. (1969); Costermans, *Trees Vict.* 34 (1966); Black, *Flor. S. Aust.* ed. 2: fig. 829 (1952); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 50 fig. 7, 9, 10 b, 11, 13, 15 & 16 (1910), as *E. hemiphloia* var. *microcarpa*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 9 (1949), as *E. hemiphloia*; Ewart, *Handb. For. Trees* t. 156 (1925), as *E. hemiphloia*.

*Vern.*: Grey Box. *Distr.*: CDGHJMNRV—also S.A., N.S.W.

[In their *Classific. Eucal.* 14 & 15 (1971), Pryor & Johnson express the opinion that *E. microcarpa* should be treated as a subspecies of *E. woollsiana* R. T. Baker. *E. hemiphloia* F. Muell. ex Benth, *Flor. aust.* 3: 216 (1867), of New South Wales & Queensland is very closely related, differing in the thinner, non-glaucous, more prominently veined juvenile leaves and much larger cylindrical fruits. Unfortunately, this well-known name must give place to the prior and highly inept *E. moluccana* Roxb. (1832). The species has been recorded for Victoria also, but evidence of definite occurrence is yet lacking.]

- Operculum *not* angular, <4 mm. long or, if ever 4 mm., then the fruits on slender pedicels 71

71. Fruit *never* simultaneously >5 mm. long, hemispherical and slenderly stalked; timber reddish 73

Fruit 5-7 mm. long,  $\pm$  hemispherical, on slender pedicels; intermediate leaves *not* orbicular; bark pale grey, rough and persistent on trunk; timber pale 72

72. Buds <8 mm. long; operculum *shorter* than calyx-tube; anthers of many outer filaments *absent*:

*E. melliodora* A. Cunn. ex Schauer. [See p. 435]

Buds 8-10 mm. long; operculum equalling length of calyx-tube; anthers present and functional on *all* filaments (very tall tree of East Gippsland):

*E. bosistoana* F. Muell. [See p. 436]

73. Bark predominantly *smooth*, dingy greenish in colour; fruit *almost sessile*,  $\pm$  thick; juvenile and adult leaves thick, *never* glaucous, *green and shining*, ovate-elliptic to broad-lanceolate, 1-2" wide (mallee or small tree to 30 ft., of scattered distribution in W. Victoria, flowering normally *Nov.-Feb.*, but sometimes as late as June):

*E. behriana* F. Muell. in *Trans. Vict. Inst.* 34 (1855).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 480 (1968); Kelly, *Eucalypts* t. 195, col. (1969); Costermans, *Trees Vict.* 60 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 1: t. 48 fig. 6-10 (1908); Black, *Flor. S. Aust.* ed. 2: fig. 818 B (1952)—stamen; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 80 (1949); Ewart, *Handb. For. Trees* t. 155 (1925).

*Vern.*: Bull Mallee. *Distr.*: BCGHJMN—also S.A., N.S.W.

—Bark hard, *rough and dark* ("box" type) on trunk, smooth and whitish on branches; fruit shortly but distinctly *pedicellate*, thin, 3-5 mm. long and wide; juvenile and adult leaves *dull*,  $\pm$  *glaucous*, *lanceolate*, <1" wide, the former often *very long and narrow*; anthers very minute *globoid reniform* (small to medium-sized tree on damp flats and watercourses in N.W. parts of State; flowers white or red, opening *Oct.-March* but chiefly Jan.-Feb.—sometimes only triennially):

*E. largiflorens* F. Muell. in *Trans. Vict. Inst.* 54 (1855).

*E. bicolor* A. Cunn. ex Mitch. *J. Exped. trop. Aust.* 390 (1848)—*nomen subnudum*.

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 472 (1968); Kelly, *Eucalypts* t. 193, col. (1969); Costermans, *Trees Vict.* 36 (1966); Black, *Flor. S. Aust.* ed. 2: fig. 824 (1952); Maiden, *Crit. Rev. Eucal.* 2: t. 49 fig. 5 a-10 a, 12 & 13 (1910), and 8: t. 8 fig. 78-80 (1930), all as *E. bicolor*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 14 (1949), as *E. bicolor*; *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 159 (1957); Ewart, *Handb. For. Trees* t. 149 (1925), as *E. bicolor*.  
*Vern.*: Black Box. *Distr.*: ABCFGHJLM—also S.A., N.S.W., Qd.

[Some authorities have confused *E. largiflorens* with *E. woollsiana* R. T. Baker which is here regarded as endemic in western N.S.W. In Blakely's *Key Eucal.* 235 (1934) several of the localities cited for the latter species—including Inglewood and N.W. of Lake Albacutya in Victoria—almost certainly resulted from misidentification of *E. largiflorens* material.

The unusual natural hybrid *E. largiflorens*  $\times$  *E. camaldulensis* has been located in three widely separated parts of Victoria, viz. Wimmera R. bridge west of Dimboola, Hattah Lakes, and Kerang Marshes; this hybrid had been described as *E. oxypoma* ("Deniliquin Box") by W. F. Blakely in his *Key Eucal.* 244 (1934). Putative hybrids between *E. largiflorens* and *E. gracilis* occur near Cowra Lagoon, in the Murray Mallee west from Merbein, and at other places in far N.W. Victoria.]

—As for the last, but rough bark paler, juvenile leaves (often also the adult) *orbicular* on slender petioles and 1-2" wide, and anthers *cuneate-oblong*

74. Leaves *all*  $\pm$  glaucous and dull, imparting a uniform bluish-grey cast; fruit obovoid to pyriform, with *curved* sides, 5-6  $\times$  4-5 mm.; timber

dark reddish (widespread small to medium-sized spreading tree, usually of poor stony slopes and ridges, flowering Sept.-Jan.):

*E. polyanthemos* Schauer in Walp. *Repert. Bot. syst.* 2: 924 (1843).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* fig. 330, col. (1968); Chippendale, *Eucal. Buds & Fruits* fig. 558 (1968); Kelly, *Eucalypts* t. 218, col. (1969); Costermans, *Trees Vict.* 32 (1966); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 58 fig. 1-8, 10 & 13, also t. 59 fig. 1-3 (1911); *For. Trees Aust.* (C'wealth Aust. Forest. & Timber Bur.) 167 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 11 (1949); Ewart, *Handb. For. Trees* t. 152 (1925); Flockton in Maiden, *For. Flor. N.S.W.* 6: t. 223 (1916).

*Vern.*: Red Box. *Distr.*: DHJMNRSVWZ—also N.S.W., A.C.T.

—Leaves all green, seldom subglaucous, often undulate on margins; fruit  $\pm$  broadly funnel-shaped and straight-sided, usually 6-7 mm. long and broad; timber pale brownish (medium to large tree chiefly on loamy flats along Gippsland lakes and rivers, but also Bacchus Marsh district, flowering Oct.-Jan.):

*E. bauerana* Schauer in Walp. *Repert. Bot. syst.* 2: 924 (1843).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 559 (1968); Kelly, *Eucalypts* t. 219, col. (1969); Flockton in Maiden, *Crit. Rev. Eucal.* 2: t. 59 fig. 6-12 (1911); Ewart, *Handb. For. Trees* t. 153 (1925); Flockton in Maiden, *For. Flor. N.S.W.* 6: t. 215 (1916).

*Vern.*: Blue Box (Fuzzy Box). *Distr.*: NSTWZ—also N.S.W., Qd.

[The propriety of maintaining *E. bauerana* as a species distinct from *E. polyanthemos* is open to question. Certainly the differences appear to be trifling, taxonomically, and where the two species overlap in eastern Victoria it is by no means always easy to distinguish them. Apiarists claim that honey from *E. bauerana* is clearer, more limpid, and decidedly superior in flavour to that from the other tree.]

75. Average adult leaf up to 10 mm. wide, rarely more; operculum 3-4 mm. long, not angular; style small, hardly exceeding calyx-tube when stamens fall; outer filaments longer than inner and without anthers; fruit  $\pm$  urceolate, sharply contracting below into a distinct pedicel (widespread mallee in N.W., flowering Aug.-Nov.):

*E. calycogona* Turcz. in Bull. Cl. phys.-math. Acad. Sci. St. Pétersb. 10: 338 (1852).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 561 (1968); Kelly, *Eucalypts* t. 221, col. (1969); Garnet, *Vegetation Wyperfeld Nat. Park* 36 fig. 1 n. 260 (1965); Costermans, *Trees Vict.* 61 (1966); Maiden, *Crit. Rev. Eucal.* 1: t. 9 (1903), 7: t. 266 fig. 1 (1925), and 8: t. 12 fig. 140-145, col. (1931); Black, *Flor. S. Aust.* ed. 2: fig. 831 A (A-D) (1952); Ewart, *Handb. For. Trees* t. 151 (1925).

*Vern.*: Red Mallee. *Distr.*: ABCFGH—also W.A., S.A.

[The coarser-leaved, larger-fruited South Australian var. *staffordii* Blakely (1934) in aspect approaches the following species; but its short style, differentiated stamens and contracting fruits are precisely those of *E. calycogona*.]



—Average adult leaf 15 mm. wide or more; operculum 4-7 mm. long, *boldly ribbed* with the corresponding angles of calyx-tube; style robust, *much exceeding orifice* at fall of stamens; filaments equal and *all* bearing functional anthers; fruit *gradually* tapering downwards into an obscure pedicel (mallee of very restricted range and apparently endemic in central N.W. and far W. Victoria; flowering *Sept.-Oct.*):

*E. froggattii* Blakely *Key Eucal.* 225 (1934).

*Illust.*: Chippendale, *Eucal. Buds & Fruits* fig. 454 (1968); Flockton in Maiden, *Crit. Rev. Eucal. I*: t. 9 fig. c & d (1903), as *E. calycogona*.

*Vern.*: Kamarooka Mallee. *Distr.*: CHM (Whipstick Scrub near Kamarooka).

[*Eucalyptus hæmastoma* Sm., *E. longifolia* Link & Otto, *E. paniculata* Sm. and *E. piperita* Sm. were recorded for the State in Ewart's *Flor. Vict.* (1931)—from Beechworth, Wilson Promontory, East Gippsland (Mt. Taylor, Mallacoota etc.) and Mitta Mitta respectively. In his *Key Eucal.* (1934), Blakely omitted all references to *E. paniculata* in Victoria, but ascribed *E. piperita* to St. Kilda, an inner suburb of Melbourne! These four New South Wales species should all be deleted from the Victorian plant census, since they are the result of past mis-identifications. Ewart's inclusion of *E. gunnii* Hook. f. in his *Flor. Vict.* 811 (1931) resulted from a misidentification of *E. glaucescens*; the former species is endemic in Tasmania, differing in its hemispherical opercula and much smaller fruits (4-6 mm. diam.).

In his *Key to the Eucalypts* 235 (1934) Blakely listed "Inglewood" and "north-west of Lake Albacutya" as Victorian localities for the Narrow-leaved or Mallee Box (*E. woollsiana* R. T. Baker)—a very small-fruited tree of the western plains in N.S.W. These records were doubtless based upon mis-identified material of *E. largiflorens*, and it is most unlikely that *E. woollsiana* occurs anywhere in Victoria. *E. intertexta* R. T. Baker (Gum-barked Coolabah), a widespread tree of inland Australia, has been found (Feb. 1951) within 4 miles north-west of Euston on the Murray River, N.S.W., and may possibly cross into Victoria near Robinvale. *E. dealbata* A. Cunn. ex Schauer (Tumble-down Gum) is widespread along the Western Slopes of New South Wales, and has been recorded for Albury district adjoining the Murray; it may be anticipated in north-eastern Victoria. *E. pulverulenta* Sims (Silver-leaved Mountain Gum) extends from the Blue Mountains to the southern end of the Monaro tableland, N.S.W., and approaches to within 24 miles of the Victorian border on the Lower McLaughlin River (near its junction with the Snowy); but it occurs in a *Eucalyptus melliodora*-*E. blakelyi* alliance and is unlikely to enter East Gippsland.]

#### LEPTOSPERMUM Forst. & Forst. f. (1776)

1. Summit of ovary and apex of capsule *glabrous* 6  
Summit of ovary and apex of capsule (at least when young) *variably pubescent* 2
2. Ovary *3-locular*; flowers sessile; calyx-tube pubescent; leaves obovate, <1 cm. long (small, very rare shrub of Mitta Mitta R. in N.E., with several slender stems arising from a common stock):

*L. multicaule* A. Cunn. in *Field Geogr. Mem. N.S.W.* 349 (1825).

*Vern.*: Silver Tea-tree. *Distr.*: RV—also N.S.W., A.C.T.

[Hitherto confused with *L. trivalve* Cheel, a N.S.W. endemic differing in its pungent leaves, subsessile flowers, villous calyx-tube and glabrous margins to sepals.]

—Ovary normally with *more than 3 loculi* 3

3. Capsule with 5-12 loculi; leaves *broad, blunt*, sometimes glaucescent, often >1" long; flowers sessile; calyx-tube *glabrous* (rarely somewhat glandular-pubescent); sepals villose on margins (small twisted trees or dense bushes on sand-dunes of coast and Mallee):

*L. lævigatum* (J. Gært.) F. Muell. in *Annu. Rep. Govt. Bot.* 22 (1858).

*Fabricia lævigata* J. Gært. *Fruct. & Semin. Plant.* 1: 175 (1788).

*Illust.*: King & Burns, *Wildflowers Tasm.* 39, col. (1969); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 281, col. (1968); Gordon in Ewart, *Handb. For. Trees* t. 185 (1925); Galbraith, *Wildflowers Vict.* ed. 3: t. 109 (1967); *Curtis's bot. Mag.* 32: t. 1304, col. (1810), as *Fabricia lævigata*. *Vern.*: Coast Tea-tree. *Distr.*: ABCEFNPTWZ—also ?W.A., S.A., Tas., N.S.W.

[Populations on the Mallee sand-hills of N.W. Victoria are referable to the var. *minus* F. Muell. ex Benth. *Flor. aust.* 3: 103 (1867) (Mallee Tea-tree), with smaller, thicker, usually acute leaves and fewer loculi (5-8) in the capsule. Some authors prefer to recognize this entity as a distinct species, *L. coriaceum* (F. Muell. ex Miq., ut *Fabricia* sp.) Cheel in *J. roy. Soc. N.S.W.* 57: 128 (1923), and under this name it appears in Ewart's *Flor. Vict.* 855 (1931).]

—Capsule usually 5-locular (rarely with 3 or 4 loculi in a few fruits) 4

4. Calyx-tube *glabrous* or nearly so; flowers  $\pm$  12 mm. diam.; valves of capsule *projecting*; leaves  $\pm$  pointed:

*L. lævigatum* (J. Gært.) F. Muell. var. *minus* F. Muell. ex Benth.

[See preceding species]

—Calyx-tube obconic, bearing appressed *white-silky hairs* on basal part, but upper part and sepals glabrous; leaves *concave*, oblanceolate, <1 cm. long, the apex somewhat *recurved*; flowers sessile, to 15 mm. diam.; fruits often  $\pm$  succulent, their valves hardly protruding (slender widespread shrub of heaths and sandy forest areas, chiefly near coast):

*L. myrsinoides* Schlechtendal in *Linnaea* 20: 653 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 794 A (fruit) & 801 (1952); *Honey Flor. Vict.* ed. 5: 99 (1949); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 9 n. 271 (1965). *Vern.*: Heath Tea-tree (Silky Tea-tree). *Distr.*: BCDEHJKMNPSTW—also S.A., N.S.W.

[Plants with pale pink flowers are not uncommon, but a bright mauve-flowered form has been noted at Walkerville on Waratah Bay.]

—Both calyx-tube and sepals bearing *spreading hairs* 5

5. Flowers  $\pm$  12 mm. diam., sessile or nearly so; leaves 4-8 mm. wide or more; capsule rather *fragile*, its valves *immersed* (small paper-barked tree of near-coastal heaths from Marlo eastwards):

*L. attenuatum* Sm. in *Trans. Linn. Soc. Lond.* 3: 262 (1797).

*Vern.*: Paperbark Tea-tree. *Distr.*: WZ—also N.S.W., Qd.

—Flowers  $\pm$  6 mm. diam., on *slender pedicels*; leaves 3-4 mm. wide; capsule rather *hard*, its valves *exserted* (taller rock-loving and often riparian shrub of eastern highlands):

*L. brevipes* F. Muell. in *Trans. Vict. Inst.* 125 (1855).

*L. attenuatum* sens. Ewart *Flor. Vict.* 856 (1931), *non* Sm. (1797).

*Illust.*: L. J. H. in Ewart, *Handb. For. Trees* t. 188 (1925), as *L. attenuatum*.

*Vern.*: Slender Tea-tree. *Distr.*: RSVWZ—also N.S.W., A.C.T.

[In *Vict. Nat.* 72: 44 (1955) N. A. Wakefield equated this species with the earlier published Queensland taxon *L. sericatum* Lindl. in *Mitch. J. Exped. trop. Aust.* 298 (1848); but the latter has a denser habit and smaller, almost *sessile* flowers with *glabrous* sepals.]

- |  |    |
|--|----|
| 6. Calyx-tube and sepals both always <i>woolly or villous</i>  | 12 |
| Calyx-tube and sepals normally <i>glabrous</i> (rarely a little pubescent)   | 7  |
| 7. Flowers <i>sessile</i> , usually borne <i>singly</i>  | 9  |
| Flowers <i>pedicellate</i> , usually in <i>axillary or subterminal clusters</i> of 2 or more   | 8  |
| 8. Leaves <i>emarginate</i> ; flowers 6-12 mm. diam., usually 2 together; calyx-lobes <i>broad and scarious</i> ; capsule 5-locular, with <i>exserted valves</i> (riparian shrub of Gippsland, from Heyfield eastwards): |    |

*L. emarginatum* Wendl. f. ex Link *Enum. Plant. Hort. Berol.* 2: 25 (1822).

*L. odoratum* Cheel in *J. roy. Soc. N.S.W.* 53: 122 (1919).

*Vern.*: Twin-flower Tea-tree. *Distr.*: SWZ—also N.S.W.

—Leaves with *acute apices*; flowers  $< 6$  mm. wide, in subterminal clusters of  $> 2$  or in leafy racemes; calyx-lobes rather *narrow, green and herbaceous*; capsule 3- (rarely 4-) locular, with *enclosed valves* (wide-spread, often riparian shrub to 10 ft. or more, sometimes a pest on agricultural land in E. Victoria):

*L. phyllicoides* (A. Cunn. ex Schauer) Cheel in *J. roy. Soc. N.S.W.* 76: 231 (1943).

*Bæckeia phyllicoides* A. Cunn. ex Schauer in Walp. *Repert. Bot. syst.* 2, Suppl. 1: 921 (1843);

*Kunzea peduncularis* F. Muell. in *Trans. Vict. Inst.* 124 (1855).

*Illust.*: Ewart, *Handb. For. Trees* t. 189 (1925), as *Kunzea peduncularis*.

*Vern.*: Burgan. *Distr.*: NRSTVWZ—also N.S.W., A.C.T., Qd.

[Several forms of this variable species are present in Victoria, differing in habit, leaf-shape, density and distribution of vestiture, also degree of elongation of lateral shoots; but it does not seem practicable yet to define them at varietal or

subspecific rank. The New Zealand *L. ericoides* A. Rich. in *Voy. Astrolabe (Bot.)* 1: 338 (1832) is closely related (and may prove to be conspecific), but it has denser foliage and often forms a tree 30-40 ft. tall.]

9. Leaves *never pungent*, their margins quite *entire* 11  
 Leaves *pungently pointed*, concave, their margins minutely *denticulate* 10  
 10. Leaves 1-3 mm. wide, broadest *towards the base*; flowers 8-12 mm. wide  
 (abundant lowland plant, usually on moist flats or in peaty swamps):

*L. juniperinum* Sm. in *Trans. Linn. Soc. Lond.* 3: 263 (1797).

*L. scoparium* sens. Ewart *Flor. Vict.* 856 (1931) *pro parte, non* Forst. & Forst. f. (1776).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 799 (1952); Rosser, *Wildflowers Vict.* 41, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 626 (1971); Costermans, *Trees Vict.* 72 (1966).

*Vern.*: Prickly Tea-tree (Black Tea-tree). *Distr.*: CDEFHJKNPRSTVWZ—also S.A., N.S.W., A.C.T.

—Leaves mostly 3-6 mm. wide, broadest *at or above the middle\**; flowers 12-18 mm. wide (shrubs of stream-banks and rocky places of E. Gippsland, E. Otways and Grampians):

*L. scoparium* Forst. & Forst. f. *Charact. Gen. Plant.* 72, t. 36 fig. f-1 (1776).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 794 c (1952)—half flower; Curtis, *Student's Flor. Tasm.* 1: fig. 50 (1956); *Honey Flor. Vict.* ed. 5: 97-98 (1949).

*Vern.*: Manuka (Broom Tea-tree). *Distr.*: CDJPWZ—also Tas., N.S.W., Qd, N.Z.

[\*Some plants of the Otway Ranges and Grampians have very wide leaves, broadest towards their bases; the identity of these populations remains uncertain. New Zealand forms of this species have been used to produce most of the colourful tea-trees in horticulture.]

11. Habit *erect* and often tall (to 10 ft.); leaves *oblanceolate to narrowly obovate*, often emarginate (riparian, occurring throughout lowlands):

*L. obovatum* Sweet *Flor. aust.* t. 36 (1827-28).

*L. flavescens* sens. Ewart *Flor. Vict.* 856 (1931) *pro parte, non strict.* Sm. (1797).

*Illust.*: Gordon in Ewart, *Handb. For. Trees* t. 186 (1925); Curtis's *bot. Mag.* 53: t. 2695, col. (1826); Sulman, *Wildflowers N.S.W.* 1: t. 42 [1913]—all as *L. flavescens*; Sweet (*l.c.*).

*Vern.*: River Tea-tree. *Distr.*: CDJNRSTVW—also N.S.W., A.C.T., Qd.

[This and the succeeding species have hitherto been included under *L. flavescens* Sm. in *Trans. Linn. Soc. Lond.* 3: 262 (1797), a closely related plant of northern N.S.W. and Qd, having small oblong leaves.]

—Habit low and *sprawling*; leaves *broadly obovate or round*, thick and rigid (localized in the subalps, chiefly at Mt. Buffalo):

*L. micromyrtus* Miq. in *Ned. kruidk. Arch.* 4: 145 (1856).

*L. flavescens* sens. Ewart *Flor. Vict.* 856 (1931) pro parte, non Sm. (1797).

*Vern.*: Button Tea-tree. *Distr.*: RSVZ—also N.S.W., A.C.T.

12. Leaves dull grey-green, at length glabrous, slightly concave, obovate, usually  $\pm$  8 mm. long and 4 mm. wide, the apex mostly rounded; flowers small; sepals short, rounded, usually pinkish (small, rough, slender shrub of swampy ground and stream-sides in alps or subalps of E. & N.E.):

*L. myrtifolium* Sieber ex DC. *Prodr.* 3: 228 (1828).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 265 (1970).

*Vern.*: Myrtle Tea-tree. *Distr.*: RSVWZ—also N.S.W., A.C.T., Qd.

—Leaves and flowers *not* combining the above characters

13. Leaves small, mostly 1-3 mm. wide, usually *spreading* 13  
 Leaves large, mostly 3-8 mm. wide, *suberect* (montane shrubs) 15  
 14. Flowers  $\pm$  1.5 cm. diam.; adult leaves relatively *thin*, glabrous and shiny (rarely felted) above but *felted and dull on under-side*, the younger leaves mostly white-villous along upper margins, acute but *hardly acuminate* (tall, erect, riparian shrub or small tree, extending down valleys from the subalps): 14

*L. grandifolium* Sm. in *Trans. Linn. Soc. Lond.* 6: 299 (1802).

*Illust.*: Curtis's *bot. Mag.* 43: t. 1810, col. (1816); Loddiges, *Bot. Cabinet* 8: t. 701, col. (1823).

*Vern.*: Mountain Tea-tree. *Distr.*: JNRSTVWZ—also Tas., N.S.W.

—Flowers 1.8-2.8 cm. diam.; adult leaves *thickish*, usually *quite glabrous and shiny on both surfaces*, *acuminate* (spreading shrub, among rocks on higher parts of Grampians and Mt. Buangor):

*L. nitidum* Hook. f. *Flor. Tasm.* 1: 139 (1856).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 79, col. (1968); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 11, col. (1959); Ashby, *Aust. Plants* 4<sup>th</sup>: 61 (1967).

*Vern.*: Shiny Tea-tree. *Distr.*: CDJ—also Tas.

[This is the so-called "*L. lanigerum grandiflorum*" of horticulture. A handsome cultivar, *L. nitidum* 'Copper Sheen' with more spreading bronzy-purplish foliage and smaller yellowish flowers, is becoming popular in Victorian gardens.]

15. Adult leaves *flat* or even slightly concave, thick, *quite glabrous*, *tapered* to an acute apex; calyx-tube and sepals *shortly glandular-pubescent* (summer-flowering and riparian, in southern districts):

*L. glabrescens* N. A. Wakefield in *Vict. Nat.* 72: 43 (1955).

*Vern.*: Smooth Tea-tree. *Distr.*: DJKNW—also ?N.S.W

[Usually a shrub to 6 (rarely 12) ft. high; but in higher-rainfall gullies, e.g. Dandenong Ranges, becoming a tree to 50 ft. with strips of papery bark and a characteristically horizontal branching habit (as in *Cedrus libani*).]

—Adult leaves usually  $\pm$  *recurved* at margins, normally *silver-pubescent* on both surfaces (rarely becoming glabrous), broad towards the apex then *contracting suddenly* into a short point; calyx-tube and sepals *densely villous* (spring-flowering and widespread, either a short-leaved shrub forming dense thickets on swampy flats or a taller long-leaved shrub along rocky banks of streams):

*L. lanigerum* (Ait.) Sm. in *Trans. Linn. Soc. Lond.* 3: 263 (1797).

*Philadelphus laniger* Ait. *Hort. kew.* 2: 156 (1789).

*Illust.*: McLennan in Ewart, *Handb. For. Trees* t. 187 (1925); Sulman, *Wildflowers N.S.W.* 1: t. 43 (1913); Loddiges, *Bot. Cabinet* 12: t. 1192, *col.* (1826).

*Vern.*: Woolly Tea-tree. *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[Victorian material of the three preceding species—*grandifolium* to *glabrescens*—has hitherto been “lumped” under the name *L. lanigerum*, as in Ewart’s *Flor. Vict.* 857 (1931); but field investigation shows them to be abundantly distinct, with little evidence of interbreeding.]

#### KUNZEA Reichenb. (1828)

1. Habit *prostrate and trailing*; leaves mostly glabrous, *loosely arranged*,  $\pm$  *orbicular*, with a short somewhat recurved point, 3-6 mm. long; floral bracts *orbicular*, as long as the calyx-tube, deciduous; flowers *whitish*, few together in terminal heads; calyx tomentose; capsule  $\pm$  *fleshy* (sandy places in far W. & Big Desert):

*K. pomifera* F. Muell. in *Trans. Vict. Inst.* 124 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 802 (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 9 n. 269 (1965).

*Vern.*: Muntries. *Distr.*: BCE—also S.A.

—Habit *erect or spreading*; leaves *crowded*, *narrow-oblong to terete*, <3 mm. wide; floral bracts narrow and acute or absent; capsule *dry* 2

2. Leaves suberect,  $\pm$  *terete*, the margins involute, 4-6 mm. long, <0.5 mm. wide; flowers in small, softly villous terminal heads; petals *yellow*; ovules <12 per loculus (alpine bush to 1 ft. high, rarely more):

*K. muelleri* Benth. *Flor. aust.* 3: 113 (1867).

*K. ericifolia* F. Muell. in *Trans. Vict. Inst.* 123 (1855), *non* Reichenb. (1828).

*Illust.*: Mass, *Flowers aust. Alps* 41 (1967).

*Vern.*: Yellow Kunzea. *Distr.*: RSV—also N.S.W.

—Leaves *oblong-linear* to elliptic >0.5 mm. wide, the apex  $\pm$  *recurved*; petals white, pink or purplish; ovules >12 per loculus (*not* alpine) 3

3. Leaves 2-4 mm. long; flowers *pink to violet*, in small heads (<1 cm. diam.) terminating *slender wiry* branchlets; floral bracts *acute*; sepals  $\pm 0.5$  mm. long; filaments <4 mm. long; stigma microscopic (widely dispersed ericoid shrub to 4 ft. high):

*K. parvifolia* Schauer in Lehm. *Plant. Preiss. I*: 124 (1844).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 207, col. (1968); Elliott in Harrison, *Handb. Trees & Shrubs S. Hemisphere* 200 (1959); Relph in Pescott, *Native Flowers Vict.* t. opp. 60 (1914); Burbidge, *Flor. Aust. Cap. Terr.* fig. 266 (1970).

*Vern.*: Violet Kunzea. *Distr.*: CDEJRVWZ—also N.S.W., A.C.T.

—Leaves 5-10 mm. long; flowers *white or creamy*, honey-scented, in dense clusters (1-2 cm. long) on very short lateral branchlets along the main branches; floral bracts *absent*; sepals  $\pm 1.5$  mm. long, green; filaments 5-7 mm. long; stigma discoid,  $\pm 0.5$  mm. wide (tall coastal and near-coastal shrub or small tree, from Wilson Prom. eastwards):

*K. ambigua* (Sm.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 629 (1917).

*Leptospermum ambiguum* Sm. in *Trans. Linn. Soc. Lond.* 3: 264 (1797).

*Illust.*: Brooks, *Aust. native Plants* t. opp. 97 (1959); White-Honey in Ewart, *Handb. For. Trees* t. 190 (1925), as *K. corifolia*; Snelling in *Curtis's bot. Mag.* 150: t. 9032, col. (1924).

*Vern.*: White Kunzea. *Distr.*: TZ—also Tas., N.S.W.

#### CALLISTEMON R. Br. (1814)

1. Staminal filaments *yellowish* or very pale pink 5  
Staminal filaments *bright red* (crimson to deep scarlet) 2
2. Leaves *terete*, pungently pointed, mostly 2-4 cm. long and  $\pm 1$  mm. diam.; spike 3-4 cm. long; axis of inflorescence and calyx *pubescent*; filaments 7-9 mm. long; anthers yellow (tall spreading shrub of Murray lands in far N.W. Mallee):

*C. brachyandrus* Lindl. in *J. hort. Soc. Lond.* 4: 112 (1849).

*Illust.*: Stones in *Curtis's bot. Mag.* 172: new ser. t. 316, col. (1958); Maiden, *For. Flor. N.S.W.* 7: t. 235 r-k, & t. opp. 63 (1918)—latter a drawing of type; Reeves, *Wild Life (Melb.)* 2: 19 (May 1940); Reeves, *ibid.* 6: 272 (1944); Everard, *Wild Flowers World* t. 137 fig. B, col. (1970).

*Vern.*: Prickly Bottlebrush. *Distr.*: A—also S.A., N.S.W.

- Leaves *flat*, reticulately veined; filaments  $\pm 15$  mm. long or more 3
3. Under-surfaces of leaves typically *pimpled* with oil-glands; leaf oblanceolate to narrow-lanceolate, 2-5 cm. long, 3-5 mm. broad, sharp-pointed; calyx *glabrous* or nearly so; anthers *yellow* (tall bushy shrub of damp sandy flats in far W. and N.W., from Glenelg R. to N. Grampians & Big Desert, also Chillingollah-Nyah district):

- C. macropunctatus* (Du M.Cours.) A. B. Court in *Vict. Nat.* 73: 175 (1957).  
*Metrosideros macropunctata* Du M. Cours. *Bot. Cult.* ed. 2, 7: 277 (1814);  
*C. rugulosus* (Willd. ex Link 1822, ut *Metrosideros* sp.) DC. *Prodr.* 3: 223 (1828);  
*C. coccineus* F. Muell. *Fragm. Phyt. Aust.* 1: 13 (1858).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 114, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 115 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 803 (1952), as *C. rugulosus*; Ewart, *Handb. For. Trees* t. 192 (1925), as *C. rugulosus*.

*Vern.*: Scarlet Bottlebrush. *Distr.*: BCDEGJ—also S.A., N.S.W.

—Leaf-surfaces dotted with glands but *not pimpled*; calyx *pubescent* (at least when young); anthers *red or purplish* (Gippsland plants)

4. Leaves *lanceolate*, 3-7 cm. long, 4-10 mm. wide, usually mucronate but *not* pungent-pointed, conspicuously net-veined; spike 5-10 cm. long; capsule 6-7 mm. diam. (tall divaricate shrub of swampy heaths from Moe district eastwards):

- C. citrinus* (Curt.) Stapf in *Curtis's bot. Mag.* 150: t. 9050, col. (1925).  
*Metrosideros citrinus* Curt. in *l.c.* 8: t. 260, col. (1794);  
*C. lanceolatus* DC. *Prodr.* 3: 223 (1828).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 486, col. (1968); Ewart, *Flor. Vict.* fig. 303 (1931); *Honey Flor. Vict.* ed. 5: 105 (1949); Maiden, *Flowering Plants & Ferns N.S.W.* t. 8, col. (1895), as *C. lanceolatus*; Rosser, *Wildflowers Vict.* 13, col. (1967); Garnet, *Wildflowers Wilson's Prom.* t., n. 601 opp. 158 (1971); *Curtis's bot. Mag.* (ll.c.).

*Vern.*: Crimson Bottlebrush. *Distr.*: STWXZ—also N.S.W., Qd.

—Leaves *linear*, 2-4 cm. long, 2-4 mm. wide, *pungent-pointed*; spike 4-6 cm. long; capsule 4-5 mm. diam. (riparian shrub  $\pm$  4 ft. high, from Nowa Nowa eastwards):

- C. subulatus* E. Cheel in *Proc. Linn. Soc. N.S.W.* 50: 259 (1925).

*Vern.*: Dwarf Bottlebrush. *Distr.*: WZ—also N.S.W.

5. Leaves needle-like, 1-3 cm. long,  $\pm$  2 mm. wide, linear, suberect, *pungent*; calyx pubescent; filaments *golden*,  $\pm$  5 mm. long and *hardly twice the length* of petals (damp ground in alps; tall shrub to 10 ft.):

- C. sieberi* DC. *Prodr.* 3: 223 (1828).

[? incl. *C. pityoides* F. Muell. *Key Syst. Vict. Plants* 1: 247 (1888)].

*Illust.*: Ewart, *Handb. For. Trees* t. 194 (1925); Maiden, *Ill. N.S.W. Plants* t. 25 (1911); Reeves in Stewart, *Vict. Nat.* 56: t. 15 (1940); Reeves in Ros. Garnet, *Vict. Nat.* 76: 137 (1959); Mass, *Flowers aust. Alps* 37 (1967).

*Vern.*: Alpine Bottlebrush. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Leaves mostly 3-8 cm. long or more,  $>2$  mm. wide, net-veined, *never* pungent; filaments  $\pm$  10 mm. long or more



6. Leaf  $\pm$  linear, 2-7 mm. wide, the oil-glands *inconspicuous*; calyx always glabrous; filaments *cream or pinkish* (widespread riparian shrub or small tree):

*C. paludosus* F. Muell. *Fragm. Phyt. Aust.* 1: 14 (1858).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 273, col. (1968); Gordon in Ewart, *Handb. For. Trees* t. 195 (1925); Maiden, *Ill. N.S.W. Plants* t. 24 (1911); Burbidge, *Flor. Aust. Cap. Terr.* fig. 267 (1970).  
*Vern.*: River Bottlebrush. *Distr.*: GHJNRSVWZ—also S.A., Tas., N.S.W., A.C.T.

—Leaf *lanceolate to oblanceolate*, 7-20 mm. wide, with *conspicuous* oil-glands, often subglaucous and blunt; calyx glabrous or pubescent; filaments normally *pale yellow* (shrub of rocky heights in E. & N.E.):

*C. pallidus* (Bonpl.) DC. *Prodr.* 3: 223 (1828).

*Metrosideros pallida* Bonpl. *Descr. Plant. Malm.* 101, t. 41 (1816).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 205, col. (1968); Maiden, *Ill. N.S.W. Plants* t. 24 (1911); Bishop, *Wild Life (Melb.)* 2: 19 (May 1940).

*Vern.*: Lemon Bottlebrush. *Distr.*: RSTVWZ—also Tas., N.S.W., A.C.T.

[A form with rosy-lilac filaments occurs at the Avon River Channels north of Boisdale, Gippsland.]

### MELALEUCA L. (1767)

- |   |   |
|---|---|
| 1. Leaves <i>alternate</i> , or a few $\pm$ <i>ternate</i>  | 7 |
| Leaves all <i>opposite</i> (and decussate)  | 2 |
| 2. Flowers <i>white or yellow</i>   | 5 |
| Flowers <i>pink to purplish</i>   | 3 |
| 3. Claw of lilac staminal bundles <i>longer than</i> petals; flowers in axillary clusters of 2-5; calyx-lobes thick, <i>acute</i> , hardening and persisting at rim of capsule which <i>remains on surface</i> of rhachis; leaves $\pm$ erect, linear or linear-lanceolate, 8-12 mm. long (dense, $\pm$ straggling shrub to 9 ft., on sandy depressions of N.W., chiefly in southern Mallee areas): |   |

*M. wilsonii* F. Muell. *Fragm. Phyt. Aust.* 2: 124, t. 15 (1861).

*Illust.*: Mueller (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 151, col. (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 57 (1886); Spurway, *Aust. Plants* 1<sup>o</sup>: 27 (1962); Hill, *Aust. Plants* 3<sup>o</sup>: 384 (1966); *Curtis's bot. Mag.* 100: t. 6131, col. (1874).

*Vern.*: Violet Honey-myrtle. *Distr.*: BCHJM—also S.A.

—Claw of staminal bundles much *shorter than* petals; calyx-lobes *rounded*; capsule  $\pm$  *immersed* in the outgrowing woody rhachis, flat and  $\pm$  5 mm. broad at base

- |   |   |
|---|---|
| 4. Leaves <i>ovate to obovate</i> , <i>spreading</i> , the apex <i>recurved</i> , 2-6 mm. long; flowers in lateral heads or short spikes (wiry ericoid shrub of S.W., usually <5 ft. high): | 4 |
|---|---|

*M. gibbosa* Labill. *Nov. Holl. Plant. Specim.* 2: 30, t. 172 (1806).

*Illust.*: Labillardière (*l.c.*); Spurway in *Aust. Plants 1<sup>st</sup>*: 26 (1962).

*Vern.*: Slender Honey-Myrtle. *Distr.*: CDEJKW—also S.A., Tas.

- Leaves *oblong-lanceolate* or *linear*, usually *erect*, mostly 5-15 mm. long; flowers in leafy spikes along the branches or in barren lateral heads (tall slender shrub, scattered on damp ground in W. and Cent. E.):

*M. decussata* R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 415 (1812).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 116, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 804 (1952); Ewart, *Handb. For. Trees* t. 196 (1925); Galbraith, *Wildflowers Vict.* ed. 3: t. 111 (1967); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 15, col. (1960).

*Vern.*: Totem-poles (Cross-leaf Honey-myrtle). *Distr.*: CDEGHJMNS—also S.A.

[Suspected hybrids between this and the preceding species occur along the upper Glenelg R., near Cherry Pool.]

5. Leaf *broadly ovate*, *acute*, wide-spreading, 5- to 7-nerved; flower-spikes terminal, dense, fragrant, bracteate, the rhachis *pubescent*; stamens *yellowish*, the claws *extremely short* (widespread shrub or paper-barked tree on wet peaty ground south of Dividing Range):

*M. squarrosa* Donn ex Sm. in *Trans. Linn. Soc. Lond.* 6: 300 (1802).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 35, col. (1968); Rosser, *Wildflowers Vict.* 51, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 110 (1967); Comber in *J. roy. hort. Soc., Lond.* 57: fig. 32 opp. 37 (1932); Ewart, *Handb. For. Trees* t. 200 (1925); Ewart, *Flor. Vict.* fig. 302 (1931); Curtis's *bot. Mag.* 44: t. 1935, col. (1817); Garnet, *Wildflowers Wilson's Prom.* fig. 631 (1971).

*Vern.*: Scented Paper-bark. *Distr.*: CDEJKNPSTWZ—also S.A., Tas., N.S.W.

- Leaf *narrow*, thick, apparently *nerveless*; stamens *whitish*, the claws *obvious* even when shorter than petals; axis of inflorescence *glabrous* (plants of far W. and N.W.)

6. Leaves *narrow-lanceolate* to *linear*, *obtuse*, mostly 3-8 mm. long; flowers in leafy terminal heads; calyx-lobes *acute* (white paper-barked tree to 25 ft., near salt-lakes in Mallee and Wimmera):

*M. halmaturorum* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 122 (1856).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 806 (1952); Black in Cheel, *Trans. roy. Soc. S. Aust.* 43: t. 38 (1919).

*Vern.*: Salt Paper-bark. *Distr.*: ACEGH—also S.A.

- Leaves *elliptic-lanceolate*, *acute*, 5-10 mm. long, usually black-dotted; flowers in lateral clusters of 3-5; calyx-lobes *obtuse*; staminal claws longer than petals (rough-barked spreading shrub to 6 ft. on sandy flats of Mallee and Wimmera):

*M. acuminata* F. Muell. *Fragm. Phyt. Aust.* 1: 15 (1858).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 9 n. 272 (1965).

*Vern.*: Mallee Honey-myrtle. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

7. Stamens *mauve or purplish*; flowers in terminal globular heads; leaves *lanceolate to linear*, mostly 5-10 mm. long, 3-nerved, *incurved* towards the acute tips (shrub to 6 ft. on damp ground of S.W., often much reduced when inhabiting rock-ledges in Grampians):

*M. squamea* Labill. *Nov. Holl. Plant. Specim.* 2: 28, t. 168 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 811 (1952); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 84, col. (1968); Edwards's *bot. Reg.* 6: t. 477, col. (1820).

*Vern.*: Swamp or Heath Honey-myrtle. *Distr.*: DEJK—also S.A., Tas., N.S.W.

[At Wright's Swamp west of Portland, a putative hybrid between this species and *M. squarrosa* has been noted. Its broadish straight-pointed leaves resemble those of the latter species, but they are alternate and the smaller spikes of pale pink flowers approach those of *M. squamea*.]

—Stamens *yellowish or white*; leaf-tips *not incurved* 8

8. Flowers in clusters, heads or small spikes <3 cm. long; leaves  $\pm$  *terete*, never linear-lanceolate 10

Flowers in spikes *usually* 3-6 cm. long, the axis prolonged into a *leafy shoot* at time of flowering in summer (tall shrubs or rough-barked trees) 9

9. Leaves >12 mm. long, very *narrow-linear to  $\pm$  terete* and channelled, usually strongly recurved at tip; filaments inserted pinnately on upper part of staminal claw which is *much longer* (6-8 mm.) than petals (coasts of far E. Gippsland, also on Rodondo Id off Wilson Prom. and on Curtis Id to the south-east):

*M. armillaris* (Soland. ex J. Gært.) Sm. in *Trans. Linn. Soc. Lond.* 3: 277 (1797).

*Metrosideros armillaris* Soland. ex J. Gært. *Fruct. et Semin.* 1: 171, t. 34 fig. 5 (1788).

*Illust.*: Gaertner (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 258, col. (1968), as *M. ericifolia*; Kerr in Ewart, *Handb. For. Trees* t. 197 (1925); Banks & Solander, *Bot. Cook's Voy.* 2: t. 114 (1901).

*Vern.*: Giant Honey-myrtle. *Distr.*: Z—also Tas. (Rodondo & Curtis Is.), N.S.W., Qd.

—Leaves <12 mm. long, *linear-lanceolate, flat*, pubescent when young, staminal claw *shorter than* petals, with 8-12 filaments (W. interior and W. coasts, extending east as far as Phillip Id):

*M. lanceolata* Otto *Horæ Phys. Berol.* 36 (1820).

*M. pubescens* Schauer in Walp. *Repert. Bot. syst.* 2: 928 (1843).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 810 (1952), as *M. pubescens*; Kerr in Ewart, *Handb. For. Trees* t. 199 (1925), as *M. parviflora*; Garnet, *Vegetation Wyperfeld Nat. Park* fig. 9 n. 273 (1965), as *M. pubescens*.

*Vern.*: Moonah. *Distr.*: ABCEFGHMNP—also W.A., S.A., N.S.W., Qd.

10. Flowers in small *lateral* clusters or spikes along branches (often onto older wood); leaves *linear*, suberect, *obtuse*, 3-8 mm. long, with scattered *tubercles on under-side* (straggling salt-tolerant shrubs of S.W. Mallee and around Grampians):

*M. neglecta* Ewart & B. Wood in *Proc. roy. Soc. Vict.* new ser. 23: 60, t. 13 fig. 1, 2 & 4 (1910).

*M. oraria* J. M. Black in *Trans. roy. Soc. S. Aust.* 69: 309 (1945).

*Illust.*: Ewart & Wood (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 814 & 815 (1952), the former as *M. oraria*.

*Vern.*: Mallee Honey-myrtle. *Distr.*: BCD—also S.A.

—Flowers in dense *terminal* to subterminal heads or short spikes; leaves  $\pm$  *terete*, >8 mm. long, *never* tuberculate 11

11. Leaves 2-6 cm. long, ending in a *fine curved point*; calyx-tube *pubescent*; staminal claws *equalling or longer than* petals; capsules compressed into dense *globular woody heads* (slender, erect, broom-like shrubs 3-9 ft. tall, in S.W. Mallee, Wimmera & Whipstick Scrub near Bendigo):

*M. uncinata* R. Br. in *Ait. f. Hort. kew.* ed. 2, 4: 414 (1812).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 813 (1952); *Curtis's bot. Mag.* 130: t. 7941, col. (1904); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 9 n. 274 (1965).

*Vern.*: Broom Honey-myrtle. *Distr.*: BCFGHM—also W.A., S.A., N.S.W., Qd.

—Leaves <2 cm. long, *bluntish*; calyx-tube *glabrous*; staminal claws *shorter than* petals (widespread taller shrubs or paper-barked trees of wet swampy terrain):

*M. ericifolia* Sm. in *Trans. Linn. Soc. Lond.* 3: 276 (1797).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 112 (1967); White-Honey in Ewart, *Handb. For. Trees* t. 198 (1925); Costermans, *Trees Vict.* 73 (1966); Garnet, *Wildflowers Wilson's Prom. t.*, n. 630 opp. 158 (1971).

*Vern.*: Swamp Paper-bark. *Distr.*: MNPSTWZ—also Tas., N.S.W., Qd.

[At present included under *M. ericifolia* is a riparian population in East Gippsland that differs in having rough (not papery) bark, frequently ternate foliage, longer and narrower flower-spikes. This has been referred to *M. ternifolia* F. Muell. ex Miq. (1856)—an imperfectly known entity, described from Argyle County, N.S.W.—but it may be undescribed and needs investigation.]

#### BÆCKEA L. (1753)

1. Flowers *solitary* in each leaf-axil; leaves normally <2 mm. wide 3  
Flowers in *axillary umbels*, each group of 2 or more on a common peduncle; leaves usually 2-5 mm. wide; ovary 3-locular (tall shrubs of E. & N.E.) 2
2. Leaves *narrow-oblong to linear-lanceolate*, 10-25 mm. long, usually *acute*, *entire*; flowers 2-9 in umbel (E. Gippsland):

**B. virgata** (Forst. & Forst. f.) Andr. *Bot. Repos.* 10: t. 598, col. (1810).

*Leptospermum virgatum* Forst. & Forst. f. *Charact. Gen. Plant.* 72 (1776).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 116 (1967); *Curtis s bot. Mag.* 47: t. 2127, col. (1820); Loddiges, *Bot. Cabinet* 4: t. 341 (1819).

*Vern.*: Tall Bæcke. *Distr.*: WZ—also N.S.W., Qd, N. Terr.

—Leaves *ovate to ± orbicular*, 3-7 mm. long, *obtuse*, the margins minutely *crenulate*; flowers 2-3 together (endemic in Buffalo Ranges, N.E. Vic.):

**B. crenatifolia** F. Muell. *Fragm. Phyt. Aust.* 4: 70 (1864).

*Camphoromyrtus crenulata* F. Muell. in *Trans. Vict. Inst.* 123 (1855).

*Vern.*: Fern-leaf Bæcke. *Distr.*: R (Mt. Buffalo).

3. Flowers *sessile*, with 2-3 *broad scarious bracts* beneath calyx; stamens 15; leaves *oblong*, thick, blunt, 1-2 mm. long (low heathland shrub of far W., from Dergholm to Big Desert):

**B. ericæa** (F. Muell.) Benth. *Flor. aust.* 3: 77 (1867).

*B. microphylla* var. *ericæa* F. Muell. *Fragm. Phyt. Aust.* 1: 31 (1858).

*Vern.*: Mat Bæcke. *Distr.*: BCD—also S.A., N.S.W.

—Flowers *stalked*, without scarious bracts; stamens normally <15 4

4. Leaves *acute* or *obtuse* but *not* needle-pointed 6

Leaves *needle-pointed*, *± terete*, the margins *involute* (white-flowered lowland shrubs to 6 ft. high) 5

5. Leaves mostly 10-15 mm. long, <0.5 mm. wide, *straight-pointed*; pedicels *short*, without bracteoles; ovary 2-locular (damp parts of far E. Gippsland):

**B. linifolia** Rudge in *Trans. Linn. Soc. Lond.* 8: 297 t. 12 (1807).

*Illust.*: Rudge (*l.c.*); F. Sulman, *Wildflowers N.S.W.* 1: t. 44 (1913); A. E. Sulman, *Some Familiar Wild Flowers* t. 17 [1913].

*Vern.*: Swamp Bæcke. *Distr.*: Z—also N.S.W., Qd.

[Victorian occurrences are all referable to the short-leaved variety *brevifolia* F. Muell. ex Benth. *Flor. aust.* 3: 80 (1866).]

—Leaves mostly 4-8 mm. long, with fine *recurved* apical points; pedicels almost *as long as leaf*, with 2 linear caducous bracteoles close to calyx-tube; ovary 3-locular (erect broom-like shrub, from Little Desert to far N.W. Mallee):

**B. behrii** (Schlechtendal) F. Muell. *Fragm. Phyt. Aust.* 4: 68 (1864).

*Camphoromyrtus behrii* Schlechtendal in *Linnæa* 20: 651 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 794 D-E & 797 (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 255 (1965).

*Vern.*: Broom Bæcke. *Distr.*: ABCF—also W.A., S.A., N.S.W.

6. Petals *white*; ovary 2-locular; pedicels *shorter than* leaves (dense bushes on boggy ground of alps and subalps, rarely descending lower in far E. Gippsland) 8

Petals usually *pinkish*; ovary 3-locular; pedicels *longer than* leaves (low plants of dry or rocky places) 7

7. Leaves *linear*, flat or thickish and concave,  $\pm$  *acute*, 4-10 mm. long; slender pedicels with a pair of *persistent bracteoles* about the middle; calyx-lobes minutely *ciliate*; petals 3-4 mm. diam. (widespread diffuse and often prostrate semi-shrub):

**B. ramosissima** A. Cunn. in *Field Geogr. Mem. N.S.W.* 349 (1825).

*B. diffusa* Sieber ex DC. *Prodr.* 3: 230 (1828).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 795 (1952); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 331, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 114 (1967); Reeves, *Wild Life (Melb.)* 7: 368 (1945); Joshua, *Aust. Plants* 4<sup>th</sup>: 57, col. (1967).

*Vern.*: Rosy Bæcke. *Distr.*: DEHJKMNPRSTWZ—also S.A., Tas., N.S.W.

[A polymorphic assemblage, some populations of which may merit taxonomic distinction.]

—Leaves *oblong to obovoid*, *plano-convex*, obtuse, 1-3 mm. long, dotted on under-surface; bracteoles *absent or fugacious*; calyx-lobes *non-ciliate*; petals  $\pm$  2 mm. diam. (small erect shrubs to 18", on sand-hills of N.W. Mallee):

**B. crassifolia** Lindl. in *Mitch. Three Exped. E. Aust.* 2: 114 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 92, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 794 F-G & 796 (1952); Nicholls, *Vict. Nat.* 58: t. 45 (Feb. 1942).

*Vern.*: Desert Bæcke. *Distr.*: ABCDFGH—also W.A., S.A., N.S.W.

8. Leaves 2-4 mm. long, often *concave* above, convex beneath but *without* obvious keel; flower-pedicels *shorter than* calyx; petals <twice as long as calyx-lobes; stamens usually 5, but sometimes up to 7 (higher alpine bogs):

**B. gunniana** Schauer in *Walp. Repert. Bot. syst.* 2: 920 (1843).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 520, col. (1968).

*Vern.*: Alpine Bæcke. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

—Leaves 4-10 mm. long, always  $\pm$  *flat* above, with *distinct keel* or rib on under-side; flower-pedicels *as long as* or longer than calyx; petals *twice* the length of calyx-lobes or longer; stamens 7-10, usually 8 (alpine, subalpine and montane bogs):

*B. utilis* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 150 (1856).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 264 (1970).

*Vern.*: Mountain Bækea. *Distr.*: RSZ—also N.S.W., A.C.T.

[The var. *latifolia* (Benth.) Willis in *Muelleria* 1: 139 (1967) differs in having much larger, obovate to elliptic leaves 2-6 mm. wide, and is apparently endemic in the Lake Mountain-Baw Baw area above 4000 ft.]

### CALYTRIX Labill. (1806)

[For the purposes of this key, the single Victorian species of *Lhotskya* has been fused with *Calytrix*. The principal difference purporting to separate these groups is the presence of an *awn-like prolongation* of the mid-nerve on each sepal of *Calytrix*, whereas *Lhotskya* has awnless sepals. The former taxon also tends to have beaked calyx-tubes, those of the latter being beakless or only slightly contracted above the ovary. In Victoria the calyx-awns of *C. tetragona* vary all the way from long and filamentous to none at all in some desert forms (F. M. Reader's ms. variety "*inermis*"), so this major criterion breaks down and cannot be used here for distinguishing genera.]

1. Flowers few, in loose  $\pm$  distant clusters; leaves perpendicular to branch, 2-5 mm. long, bearing scattered stiff hairs; calyx-tube  $\pm$  3 mm. long, as long as the 2 ciliolate bracteoles; sepals orbicular,  $\pm$  1 mm. long, awnless (wiry, open shrub of Grampians and Mallee heaths of Little and Big Deserts):

*C. alpestris* (Lindl.) A. B. Court in *Vict. Nat.* 73: 176 (1957).

*Genetyllis alpestris* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 178 (1838);

*Lhotskya alpestris* (Lindl.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 633 (1917).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 99, col. (1968); Ewart, *Flor. Vict.* fig. 304 (1931); Galbraith, *Wildflowers Vict.* ed. 3: t. 113 (1967); Reeves in Barrett, *Aust. Wildflower Book* t. opp. 181 (1942).

*Vern.*: Snow Myrtle. *Distr.*: BCDJ—also S.A.

[*L. alpestris* var. *bracteosa* (Benth.) J. M. Black *Flor. S. Aust.* 426 (1926) is a desert population having thin ciliate floral leaves or bracts, dissimilar to the glabrous stem-leaves.]

- Flowers numerous in dense corymb-like clusters; leaves mostly inclined to axis; calyx-tube  $>3$  mm. long, exceeding the 2 bracteoles; sepals ovate,  $\pm$  2 mm. long, usually awn-tipped
2. Leaf glabrous, mucronate, 7-10 mm. long; calyx-tube exerted only 1-2 mm. beyond glabrous bracteoles; calyx-awn minute,  $<2$  mm. long (endemic in Grampians):

*C. sullivanii* F. Muell. *Fragm. Phyt. Aust.* 9: 1 (1875).

*Illust.*: Elliott in Harrison, *Handb. Trees & Shrubs S. Hemisphere* 67 (1959); Reeves, *Vict. Nat.* 58: t. 26 (Feb. 1942); Lee, *Wild Life (Melb.)* 7: 278 (1945).

*Vern.*: Grampians Fringe-myrtle. *Distr.*: CDJ.

—Leaf often  $\pm$  hairy, *blunt* or with very minute mucro, mostly  $< 6$  mm. long; calyx-tube exserted for 4-5 mm. beyond the bracteoles; sepals often purplish; calyx-awn mostly 10-12 mm. long, but occasionally reduced or even absent (widespread variable shrub):

**C. tetragona** Labill. *Nov. Holl. Plant. Specim.* 2: 8, t. 146 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 125, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 860 (1952); Niedenzu in Engler, *Natürl. PflFam.* III 7: fig. 46 (1893), as *Calycothrix tetragona*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 262 (1970); Reeves in Garnet, *Vegetation Wyperfeld Nat. Park* 21 (1965), as *C. alpestris* var. *bracteata*; Morcombe, *Aust. Wildflowers* t. on [34], col. (1970).

*Vern.*: Fringe-myrtle. *Distr.*: ABCDEFHJMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[As circumscribed at present, *C. tetragona* in Victoria is extremely polymorphic, including populations from low ground-shrubs to small trees, both hairy and glabrous plants, those with long calyx-awns and others with virtually none. Besides, there are differences in the aromas of crushed leaves, indicative of changes in the composition of essential oils. The whole group is obviously much in need of a taxonomic revision.]

#### MICROMYRTUS Benth. (1865)

**M. ciliata** (Sm.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 636 (1917).  
*Imbricaria ciliata* Sm. in *Trans. Linn. Soc. Lond.* 3: 259 (1797).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 81, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 858 (1952); Reeves in Barrett, *Aust. Wildflower Book* 188 (1942); Audas, *One of Nature's Wonderlands* t. opp. 61 (1925); Morrison, *Aust. Plants* 4<sup>30</sup>: 53 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 263 (1970).

*Vern.*: Heath-myrtle. *Distr.*: BCDEHJMRUVW—also S.A., N.S.W., A.C.T.

[Two distinct forms of *M. ciliata* are recognizable in Victoria—a sprawling, often procumbent plant of rocky places, and a stiffly erect shapely bush (to 3 ft. high) on Mallee sand-hills. Flowers of the latter are invariably white, but those of the former are often heavily pigmented with red.]

#### THRYPTOMENE Endl. (1840)

Leaves oblong to obovate, 5-12 mm. long, somewhat *keeled* beneath and often with a short  $\pm$  *recurved point*; flowers *pedicellate*; calyx-tube *campanulate*, scarcely ribbed,  $\pm$  produced above the ovary; sepals  $\pm$  2 mm. long, orbicular, petaloid, *equal to petals* (endemic in Victorian Grampians, but now widely cultivated):

**T. calycina** (Lindl.) Stapf in *Curtis's bot. Mag.* 149: sub t. 8995 (1924).

*Bæckeia calycina* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 189 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 111, col. (1968); Joshua, *Aust. Plants* 4<sup>30</sup>: cover, col. (1967); Reeves in Rodgers, *Wild*



*Life* (Melb.) 1: 9 (Oct. 1939); Mueller, *Key Syst. Vict. Plants* 2: fig. 56 (1886), as *T. mitchelliana*.

*Vern.*: Grampians Thryptomene. *Distr.*: CDJ.

Leaves obovate, 4-6 mm. long, *not* keeled and with apex rounded; flowers *subsessile*; calyx-tube  $\pm$  cylindrical, 10-ribbed, never produced above the ovary; sepals 1-2 mm. long, slightly larger than petals (coastal shrub of Gippsland, restricted in Vic. to Sperm Whale Head & Dutson Downs):

*T. micrantha* Hook. f. in Hook. *J. Bot. Kew Gdn Misc.* 5: 299, t. 8 (1853).

*T. miqueliana* F. Muell. *Fragm. Phyt. Aust.* 1: 11 (1858).

*Illust.*: Hooker (*l.c.*).

*Vern.*: Ribbed Thryptomene. *Distr.*: WX—also S.A., Tas., N.S.W.

### DARWINIA Rudge (1815)

Leaves 2-3 mm. long, linear, *blunt*, the floral ones *slightly larger*; bracteoles *pink*, conspicuous; calyx-lobes  $\pm$  1 mm. long; style almost *straight*, with a *conspicuous brush of glandular hairs* extending for up to 1 mm. along the distal part (delicate, wiry undershrub, on S. fringe of Little Desert where extremely rare if not extinct):

*D. micropetala* (F. Muell.) Benth. in *J. Linn. Soc. (Bot.)* 9: 181 (1865).

*Genethyllis micropetala* F. Muell. *Fragm. Phyt. Aust.* 1: 12 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 855 (1952).

*Vern.*: Small Darwinia. *Distr.*: C—also S.A.

Leaves 6-12 mm. long, triquetrous, *mucronate*, the floral ones *not enlarged*; bracteoles *yellow-green*; calyx lobes <0.5 mm. long; style *strongly curved*, with a *microscopic ring of hairs* below the tip (far E. Gippsland, where very localized and at present known only from along the coast between Benedore R. & Little Ram Head, also on heaths east of Howe Range):

*D. camptostylis* B. G. Briggs in *Contr. N.S.W. Herb.* 3: 141 (1962).

*D. taxifolia* sens. Ewart *Flor. Vict.* 875 (1931), *non* A. Cunn (1825).

*Vern.*: Darwinia. *Distr.*: Z—also N.S.W.

[N. A. Wakefield in *Vict. Nat.* 69: 84 (1952) misidentified the then-known single Victorian collection—labelled simply “East Gippsland” and collected by C. Walter, 1869-71—as *Homoranthus virgatus* A. Cunn. (a terete-leaved shrub unknown south of New England district, N.S.W.). He dismissed this, together with several other contributions by Walter, as an erroneous record; but *D. camptostylis* has more recently (Oct. 1969) been noted at definite Victorian localities, as indicated above.

In Ewart's *Flor. Vict.* 795-96 (1931), *Backhousia myrtifolia* Hook. & Harv. is admitted for E. Gippsland, with the note “of rare occurrence, and of limited range if Victorian”. Since there are no local specimens of this small rain-forest tree at Melbourne Herbarium, and as records of its natural occurrence south of Mt. Dromedary (near Tilba Tilba) are lacking, the species has been excluded from *Myrtaceæ* in the present Handbook.]

## Family LYTHRACEÆ

Petals *conspicuous, purplish*, 4-6; torus ("calyx-tube") *cylindrical*, 3-8 mm. long; capsule *hard, opaque, elongated* *Lythrum* (p. 461)

Petals *minute or absent*, 4; torus *broadly campanulate*, 1 mm. long; capsule *hyaline, globular* (annual of wet places in N.W. Mallee)

*Ammannia* (p. 462)

## LYTHRUM L. (1753)

1. Petals 1.5-2.5 mm. long; torus  $\pm$  3 mm. long (to 6 mm. in fruit); stamens 4-6, *all enclosed*; leaves mostly *alternate* (glabrous procumbent annual, very widespread and common in damp or flooded places):

*L. hyssopifolia* L. *Spec. Plant.* 1: 447 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 792 (1952); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 274 (1957); Ross-Craig, *Drawings Brit. Plants* 11: t. 16 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 188 fig. 2 col., also 5<sup>a</sup>: fig. 2165 (1925); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1013, col. (1921).

*Vern.*: Small Loosestrife. *Distr.*: ACDEFHJKMNPRSTVXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Petals 5-10 mm. long; torus 5-8 mm. long; stamens 12, *six being exerted* (perennials) 2

2. Plant *glabrous, creeping* or *ascending*; leaves *alternate*, <1" long; flowers *solitary* in the axils (scattered in moist parts of W. Victoria between Dandenong Ranges and Portland, also Dimboola):

\**L. flexuosum* Lag. *Gen. & Spec. Plant.* 16 (1816).

*Illust.*: Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1012, col. (1921), as *L. græfferi*; Coste, *Flor. Franc.* 2: fig. 1316 (1903), as *L. græfferi*; *Gartenflora* 19: t. 664 fig. 1-3, col. (1870).

*Vern.*: Mediterranean Loosestrife. *Distr.*: CDEN—also S.A., N.Z.

—Plant *pubescent, erect*, 2-4 ft. high; leaves *opposite*, slightly stem-clasping, 1-3" long; flowers *cymosely clustered* in each axil of a leafy bract, the whole forming a long spike (widespread in moister lowland districts, except Mallee, commonly along streams):

*L. salicaria* L. *Spec. Plant.* 1: 446 (1753).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 225 fig. 61 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 791 (1952); Ross-Craig, *Drawings Brit. Plants* 11: t. 15 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 188 fig. 1 col., also 5<sup>a</sup>: fig. 2158, 2159, 2167-69 (1925); Koppel, *Flor. Israel* t. [133], col. (1956); Coste, *Flor. Franc.* 2: fig. 1315 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 261 (1970).

*Vern.*: Purple Loosestrife. *Distr.*: CDEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd,

## AMMANNIA L. (1753)

*A. multiflora* Roxb. *Flor. Ind.* 1: 447 (1820).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 793 (1952).

*Vern.*: Jerry-jerry. *Distr.*: CF—also W.A., S.A., N.S.W., Qd, Cent. Aust.

## Family ONAGRACEÆ

1. Tall shrub; sepals *petaloid, red*; fruit a *berry, pendulous* \**Fuchsia* (p. 466)  
 Herbs, annual or perennial; sepals *green*; fruit *upright, capsular or nut-like* 2
2. Expanded flowers mostly >1" wide, 4-partite; thalamus-tube *prolonged into a beak* above the ovary \**Oenothera* (p. 462)  
 Expanded flowers <1" wide; thalamus-tube *not prolonged* above the ovary 3
3. Flowers 5-partite, *yellow* (creeping mud- or water-plants with *alternate*, stalked leaves) *Ludwigia* (p. 466)  
 Flowers 4-partite, *white to pink or purplish* (rarely all green) 4
4. Racemes *leafless*; fruit *nut-like*, 3- to 4-ribbed, with 1-4 seeds (leaves *alternate*) \**Gaura* (p. 466)  
 Racemes *leafy* (or flowers sessile in axils); fruit *capsular, many-seeded* (leaves chiefly *opposite*) 5
5. Flowers *racemose*; petals *conspicuous*; fruit *elongated*, >10 mm. long *Epilobium* (p. 463)  
 Flowers *axillary*, sessile; petals *minute or absent*; fruit *short*, top-shaped, 4-angled, <6 mm. long (prostrate herb, rooting on mud) *Ludwigia* (p. 466)

## \*OENOTHERA L. (1753)

1. Stem-leaves tapering into *distinct petioles*, the branches sprinkled with *uniform*, white and variably flexed hairs; sepals 6-8 mm. long; petals *rosy-pink*,  $\pm$  1 cm. long; capsule prominently clavate (widest near apex where 3-4 mm.), *sharply angled*, covered with short, appressed curved white hairs; seeds thin, angular,  $\pm$  hood-shaped, 0.5-1 mm. long (Mildura district):

\**O. rosea* Soland. in Ait. *Hort. kew.* 2: 3 (1789).

*Illust.*: Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1000, col. (1921); *Curtis's bot. Mag.* 10: t. 347 (1796); Léveillé & Guffroy, *Monogr. Oenothera* t. opp. 28, t. opp. 111, 130 (1902); Coste, *Flor. Franc.* 2: fig. 1291 (1903).

*Vern.*: Rose Evening Primrose. *Distr.*: A—also N.S.W., Qd.

—Stem-leaves *subsessile*, branches with both very short and long hairs; sepals >15 mm. long; petals *yellow* (at least when young), >2 cm. long; capsules with low, *rounded vertical ridges*; seeds >1 mm. long 2

2. Basal leaves *linear-lanceolate*, distantly denticulate, <2 cm. wide; hairs *never bulbous* at base; petals 2.5-4 cm. long, yellow at first, then *changing to wine-red*; capsule  $\pm$  4 mm. wide, clavate-cylindric, *tapering toward base*; seeds *pale, smooth*,  $\pm$  shining, coracle-shaped,  $\pm$  0.5 mm. wide (dispersed throughout lowlands, usually on sandy ground):

\**O. striata* Ledeb. in Link *Enum. Plant. Hort. Berol.* 1: 377 (1821).

\**O. biennis* sens. Ewart *Flor. Vict.* 876 (1931), *non* L. (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 863 (1952); Ross-Craig, *Drawings Brit. Plants* 11: t. 34 (1958); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 999, col. (1921); Coste, *Flor. Franc.* 2: fig. 1292 (1903)—all as *O. stricta*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 269 (1970).

*Vern.*: Common Evening Primrose. *Distr.*: ABCFJNPRTVW—also S.A., N.S.W., A.C.T.

—Basal leaves *broadly oblong to oblanceolate*, >2 cm. wide; longer hairs on branchlets, calyces and fruits arising from *red bulbous bases*; petals 4-5 cm. long and broad, *remaining bright yellow*; capsule 5-6 mm. wide, oblong-lanceolate, *broadest at base*; seeds *dark, angular*, truncate, with 4-5 *narrow wings*, 1 mm. wide or more (biennial to 5 ft. tall, scattered as a garden escape around Melbourne, also at Terang and along Snowy R.):

\**O. erythrosepala* Borbás in *Ung. bot. Bl.* 2: 245 (1903).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 11: t. 33 (1958)

*Vern.*: Evening Primrose. *Distr.*: KNVZ—also N.S.W., A.C.T.

[In *Flor. Vict.* 876 (1931) Ewart admits the S. American *O. tetraptera* Cav. as a garden escape "widely spread in Victoria". There are no Victorian specimens at Melbourne Herbarium, nor does anyone seem to have noted the species as spontaneous in this State during the past four decades. This plant has deeply toothed leaves, large white to rose flowers and clavate capsules with winged angles. Ewart also mentions the Chilean *O. odorata* Jacq. and *O. acaulis* Cav. as occasional garden escapes; the last, prostrate with *lyrate-pinnatisect* foliage, large white flowers and 4-winged capsules, is apparently naturalized in parts of S. Australia. North American perennial *O. speciosa* Nutt. is often grown for ornament, and within recent years has been observed as a garden escape at Donald; this white- to pink-flowered plant has broadish denticulate leaves and short fusiform capsules.]

#### EPILOBIUM L. (1753)

1. Stems *creeping or prostrate* (only the tips ascending), <4" long; leaves blunt, elliptic, glabrous, thick, shining, 8-10 mm. long; petals pink, 2-4 mm. long, scarcely exceeding the sepals (high alpine):

*E. tasmanicum* Hausskn. *Monogr. Epilob.* 296, t. 20 fig. 84 (1884).

*E. confertifolium* sens. Ewart *Flor. Vict.* 877 (1931), *non* Hook. f. (1844).

*Illust.*: Haussknecht (*l.c.*); Léveillé, *Icon. Epilob.* t. 24 (1910).

*Vern.*: Snow Willow-herb. *Distr.*: SV—also Tas., N.S.W. (Mt. Kosciusko), N.Z.

—Stems *erect or ascending*, >4" high (or, if less, then petals >4 mm. long) 2

2. Plant with short spreading *glandular hairs* on apex of stem and upper part of ovary; seeds with papillæ arranged in  $\pm$  *longitudinal rows*, appearing striate, the hair-tuft arising from a *rounded apical beak*; petals pale pink, deeply notched (to  $\frac{1}{2}$ ) (urban weed to 3 ft. high, much-branched):

\**E. adenocaulon* Hausskn. in *Öst. bot. Z.* 29: 119 (1879).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 11: t. 23 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 2194 (1925); Ash & Sandwith, *J. Bot., Lond.* 73: t. 609 opp. 177 (1935); Burbidge, *Flor. Aust. Cap. Terr.* fig. 268 D (1970)—seed.

*Vern.*: Glandular Willow-herb. *Distr.*: NSV—also Tas., N.S.W., A.C.T.

—Plants *without glandular hairs*; seeds never as above 3

3. Plant (except larger early leaves) greyish-white from a tomentum of *spreading villous hairs* mixed with shorter ones; corolla creamy-white, relatively *very small* (only slightly longer than calyx):

*E. hirtigerum* A. Cunn. in *Ann. nat. Hist.* 3: 33 (1839).

*Illust.*: Lévillé, *Icon. Epilob.* t. 18 (1910).

*Vern.*: Hairy Willow-herb. *Distr.*: EHJKNPR—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Plant glabrous to pubescent, but *without spreading hairs*; corolla normally *much longer* than calyx 4

4. Stems usually 3 ft. high or more; flowers 2 cm. wide or even larger; capsules hoary, 2-3" long; seeds ovoid, plano-convex, densely papillose (widespread swamp plant):

*E. pallidiflorum* Soland. ex A. Cunn. in *Ann. nat. Hist.* 3: 34 (1839).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 866 (1952); Galbraith, *Wildflowers Vict.* ed. 3: t. 118 (1967); Lévillé, *Icon. Epilob.* t. 19 (1910); Cheeseman, *Ill. N.Z. Flora* 1: t. 51 (1914).

*Vern.*: Showy Willow-herb. *Distr.*: DEJNPRSTWZ—also S.A., Tas., N.S.W., N.Z.

—Stems usually 6-24" high; flowers much <2 cm. wide 5

5. Plant  $\pm$  *hoary-pubescent*; leaves predominantly *alternate*; seeds *not winged* (highly variable, widespread perennial herb):

*E. cinereum* A. Rich. in *Voy. Astrolabe (Bot.)*, 1: 330 (1832).

*E. junceum* sens. Ewart *Flor. Vict.* 877 (1831) atque auctt. Aust., non Forst. ex Spreng. (1825).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 268 B (1970)—seed.

*Vern.*: Variable Willow-herb. *Distr.*: BCDEFHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Plants glabrous or nearly so; leaves predominantly *opposite*, their margins often crisped; seeds usually with small *lateral wings* 6

6. Capsule 1-2 cm. long; seeds *without* a plume of hairs (small plant of alps and subalps, the lower branches *procumbent and rooting in mud*; petals pale pinkish, 5-7 mm. long):

*E. curtisiae* P. H. Raven in *Aliso* 5: 249 (1963).

*Oenothera tasmanica* Hook. f. in *Lond. J. Bot.* 6: 475 (1847), *non*

*E. tasmanicum* Hausskn. (1884);

*Boisduvalia tasmanica* (Hook. f.) Munz in *Darwiniana* 5: 142 (1941).

*Vern.*: Bald-seeded Willow-herb. *Distr.*: SV—also Tas., N.S.W.

[An undescribed species of similar size and appearance to *E. curtisiae*, but with *long-pedicellate fruits and comose seeds*, has been found on the Dargo High Plains; it occurs also in N.E. Tasmania (on Mt. Ben Lomond). This was recently published, as *E. willisii*, by Raven & Engelhorn in *N.Z. J.Bot.* 9<sup>2</sup>: 347 (1971).]

- Capsule 4-7 cm. long; seeds crowned with a *plume of long silky hairs* 7  
7. Leaves *broadly* elliptic or ovate-lanceolate, subcordate at base, the margins with *closely set, small irregular teeth*; petals *pale pink*, 6-8 mm. long, the apical notch  $\pm$  1 mm. deep; style  $\pm$  2 mm. long (widespread in damp cooler lowlands):

*E. billardierianum* Ser. ex DC. *Prodr.* 3: 41 (1828).

*E. glabellum* sens. Ewart *Flor. Vict.* 878 (1931), *non* Forst. f. (1786).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 232 fig. 63 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 865 (1952); Léveillé, *Icon. Epilob.* t. 15 (1910).

*Vern.*: Robust Willow-herb. *Distr.*: CDEJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

[Where *E. billardierianum* and *E. cinereum* grow together, hybrids between these species occasionally appear.]

- Leaves *narrowly* elliptical or lanceolate, the margins with small *distant glandular teeth*; petals often *rosy-purplish*, to 14 mm. long, the apical notch  $\pm$  2 mm. deep (montane to alpine plants) 8  
8. Base of leaf *narrowed*; sepals 5-6 mm. long, usually *puckered and  $\pm$  nodular* in dried state; petals 7-8 mm. long; style  $< 2.5$  mm. long; seeds almost *smooth*, *contracting into a distinct neck* that bears the plume of hairs:

*E. sarmentaceum* Hausskn. in *Öst. bot. Z.* 29: 149 (1879).

*Illust.*: Haussknecht, *Monogr. Epilob.* t. 18. (1884); Léveillé, *Icon. Epilob.* t. 16 (1910); Burbidge, *Flor. Aust. Cap. Terr.* fig. 268 A (1970).

*Vern.*: Mountain Willow-herb. *Distr.*: V (Bogong High Plains)—also Tas., N.S.W., A.C.T.

- Base of leaf *rounded or cordate*; sepals  $\pm$  7 mm. long, remaining *smooth and even* when dry; petals 12-14 mm. long, always richly coloured; style  $\pm$  5 mm. long; seeds minutely *papillose*, *not* contracting below the terminal hair-tuft:

*E. gunnianum* Hausskn. in *Öst. bot. Z.* 29: 149 (1879).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 21, col. (1856), as *E. billardierianum*; Léveillé, *Icon. Epilob.* t. 19 (1910); Burbidge, *Flor. Aust. Cap. Terr.* fig. 268 c (1970)—seed.

*Vern.*: Gunn's Willow-herb. *Distr.*: CNRSVW—also Tas., N.S.W., A.C.T.

### LUDWIGIA L. (1753)

Plant  $\pm$  pubescent; flowers on slender peduncles; petals 5, longer than sepals, bright yellow; stamens 8; capsule cylindrical,  $\pm$  20 mm. long; seeds  $\pm$  1 mm. long (lowland lakes and lagoons throughout State, except in S.W.):

*L. peploides* (Kunth.) P. H. Raven in *Reinwardtia* 6<sup>4</sup>: 393 (1963).

*Jussiaea peploides* Kunth. in Humb. et al. *Nov. Gen. & Spec.* 6: 97 (1823);

*J. repens* sens. Ewart *Flor. Vict.* 878 (1931) atque Benth., et al., *non* L. (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 867 (1952), as *Jussiaea repens*; Williamson, *Vict. Nat.* 44: 330 fig. 5 (1928), as *J. diffusa*; Abrams, *Ill. Flor. Pacific States* 3: fig. 3352 (1951), as *J. repens*; Hooker, *Bot. Misc.* 3: suppl. tab. 40, opp. 300 (1833), as *J. repens*.

*Vern.*: Clove-strip. *Distr.*: AFGMQRWX—also S.A., N.S.W., Qd.

[Australian populations are apparently all referable to the subspecies *montevidensis* (Spreng.) P. H. Raven l.c.]

Plant glabrous; flowers sessile; petals minute or absent; stamens 4; capsule  $\pm$  turbinate, 4-angled, 4-6 mm. long; seeds  $\pm$  0.5 mm. long (N.E. only, along valleys of Ovens & Kiewa Rivers):

\**L. palustris* (L.) Elliott *Sketch Bot. S. Carolina & Georgia* 1: 214 (1821).

*Isnardia palustris* L. *Spec. Plant.* 1: 120 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 11: t. 17 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: fig. 2192 (1925); Allen, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 35 n. 1 (1940); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1001, col. (1921), as *Isnardia palustris*; Pomeroy in Mason, *Flor. Marshes Calif.* fig. 279 (1957); Everard, *Wild Flowers World* t. 16 fig. G, col. (1970).

*Vern.*: Marsh Ludwigia. *Distr.*: RV—a'so N.Z.

[Two exotic genera of *Onagraceæ* have been noted as casuals in Victoria during the past 35 years. The hairy biennial *Gaura parviflora* Dougl. ex Hook. appeared on farmland at Cohuna in Nov. 1938, but it has never been reported again and must have been a stray introduction that failed to multiply. This tall herb from western U.S.A. has subsessile ovate-lanceolate leaves to 4" long and numerous reddish glabrous flowers (6-9 mm. long) in terminal elongated spikes.

South American *Fuchsia magellanica* Lam. var. *macrostema* (Ruiz & Pav.) Munz, *F. gracilis* Lindl. being synonymous, is a tall weak glabrescent shrub that was found in a gully at Hordern Vale (S.W. Otways) in May 1963—presumably an escape from cultivation. The same species is well established in some fern-gullies and rain-forest margins of the Tasmanian west coast. Its decorative red-and-violet flowers (about 1" long) hang bell-like from long slender pedicels.]

## Family HALORAGACEÆ

1. Fruit breaking into 4 one-seeded nut-like fruitlets; leaves often whorled (weak herbs growing in or near water) *Myriophyllum* (p. 470)  
Fruit of coherent carpels, never breaking up into fruitlets; leaves never whorled (land-plants, excepting *Haloragis brownii*) 2
2. Flowers in racemes (these sometimes paniculate), small,  $\pm$  inconspicuous, green or reddish, shortly pedicellate, leaves approximate, often rough and scabrid; fruit wingless (except in *H. odontocarpa* & *H. racemosa*), 2- to 4-seeded *Haloragis* (p. 467)  
Flowers in dense corymbose panicles, showy, yellow, on filiform pedicels; leaves distant, often evanescent, glabrous; fruit broadly 2-winged, 1-seeded (rush-like perennial of sandy Mallee tracts) *Loudonia* (p. 467)

## LOUDONIA Lindl. (1839)

*L. behrii* Schlechtendal in *Linnæa* 20: 648 (1847).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* fig. 129 (1968); Black, *Flor. S. Aust.* ed. 2: fig. 869 (1952); Petersen in Engler, *Natürl. PflFam.* III 7: fig. 101 c (1893)—fruit; Schindler in Engler, *Pflanzenreich IV* 225 (Heft 23): 18 fig. 4 c (1905)—fruit.

*Vern.*: Golden Pennants. *Distr.*: ABCFHM—also S.A., N.S.W.

## HALORAGIS Forst. &amp; Forst. f. (1776)

1. Flowers mostly 2 or more per axil (except sometimes a few of the lower flowers) 8  
Flowers solitary in the axil of each leaf or floral bract 2
2. Leaves alternate, lanceolate, 1-4 cm. long, entire or denticulate; fruit blackish, transversely wrinkled (wholly grey-hispid plant of rocky places, e.g. granitic areas):

*H. elata* A. Cunn. ex Fenzl in Endl. et al. *Enum Plant. Hueg.* 45 (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 872 (1952); Schindler in Engler, *Pflanzenreich IV* 225 (Heft 23): 26 fig. 6 b, 27 fig. 7 (1905).

*Vern.*: Raspwort. *Distr.*: CDEHJMNRSVW—also S.A., N.S.W., A.C.T., Qd.

—Leaves opposite (at least along the main stems) 3

3. Leaves linear, 1-2 cm. long, entire or with a few (usually 2) narrow lateral lobes; petals red; fruit 8-ribbed, tuberculate (rare plant of Wimmera and Sunbury districts, apparently endemic):

*H. rubra* Schindl. in *Pflanzenreich IV* 225 (Heft. 23): 30, fig. 8 (1905).

*Illust.*: Schindler (*l.c.*).

*Vern.*: Raspwort. *Distr.*: CN.

—Leaves ovate to lanceolate, the larger ones crenato-serrate with numerous teeth 4



4. Petals of the *minute* red flowers  $\pm$  1 mm. long (or less); leaves  $\pm$  *orbicular*, mostly <1 cm. long (creeping plant of wet peaty ground):

*H. micrantha* (Thunb.) Siebold & Zucc. *Flor. Japon. Fam. nat.* 1: 25 (1843).  
*Gonocarpus micranthus* Thunb. *Nov. Gen. Plant.* 55 (1783).

*Illust.*: Bailey, *Compr. Cat. Qd Plants* fig. 146 (1913); Bailey, *Weeds & susp. poison Plants Qd* 54 (1906); Petersen in Engler, *Natürl. PflFam.* III 7: fig. 102 E (1894); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 42 (1905).

*Vern.*: Creeping Raspwort. *Distr.*: DEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z., N.G., Indonesia, S.E. Asia.

—Petals about 2-3 mm. long; leaves *not orbicular* 5

5. Fruit *smooth*, shiny, reddish, with 4 or 8 pale obtuse ribs; leaves ovate, usually <1 cm. long (alps and subalps of E. highlands):

*H. serpyllifolia* (Hook. f.) Walp. *Repert. Bot. syst.* 2: 99 (1843).  
*Goniocarpus serpyllifolius* Hook. f. *Icon. Plant.* 3: t. 290 (1840);  
*H. depressa* Walp. *l.c.*

*Illust.*: Hooker f. (*l.c.*).

*Vern.*: Raspwort. *Distr.*: VZ—also Tas., N.S.W., A.C.T.,

—Fruit *wrinkled or warty* between the vertical ribs 6

6. Floral bracteoles *reddish, glabrous*, conspicuously denticulate-lobed (Grampians plant):

*H. meziana* Schindl. in *Pflanzenreich* IV 225 (Heft 23): 29, 32 fig. 9b (1905).

*Illust.*: Schindler (*l.c.*).

*Vern.*: Raspwort. *Distr.*: CDJ—also S.A.

[The differences purporting to separate this taxon from the succeeding species, *H. teucrioides*, appear rather trifling. In W. M. Curtis's *Student's Flor. Tasm.* 1: 188 (1956) it has been merged with the latter.]

—Floral bracteoles *greenish, hispid*, not denticulate-lobed 7

7. Vestiture of *spreading* or even reflexed hairs; leaves broadly *elliptic-ovate* prominently punctulate on under-side; fruit wrinkled but *not asperous*; bracteoles about *as long as* mature fruit:

*H. teucrioides* (DC.) Schlechtendal in *Linnaea* 20: 648 (1847).

*Goniocarpus teucrioides* DC. *Prodr.* 3: 66 (1828).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 871 (1952); Curtis, *Student's Flor. Tasm.* 1: fig. 47 (1956); Fitch in Hooker f., *Flor. Tasm.* 1: t. 22, col. (1856), as *H. gunnii*.

*Vern.*: Raspwort. *Distr.*: DEJNVWZ—also S.A., Tas., N.S.W., Qd.

—Vestiture usually of forwardly *appressed* (rarely spreading) hairs; leaves *elliptic-lanceolate*; fruit usually *minutely asperous* (rarely wrinkled only); bracteoles  $\pm$  *half as long as* mature fruit, or less (exceedingly widespread common plant):

*H. tetragyna* (Labill.) Hook. f. *Flor. Tasm.* 1: 120 (1856).

*Gonocarpus tetragyna* Labill. *Nov. Holl. Plant. Specim.* 1: 39, t. 53 (1805).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 868 A-C (1952); Ewart, *Flor. Vict.* fig. 307 (1931)—flower; Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 32 fig. 9 c (1905)—flower.

*Vern.*: Common Raspwort. *Distr.*: CDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[In addition to the typical form, the following two varieties have been recognized in Victoria: var. *serrata* Schindl. in *Pflanzenreich* IV 225 (Heft 23): 33. (1905), with denser more spreading vestiture and narrower sharply toothed leaves; var. *bicallosa* Schindl. *l.c.* 33 (1905), with only 2 callosities between ribs of the fruit.]

8. Fruit smooth or *obtusely ribbed*, but never acutely angled or winged 10  
Fruit with 4 *winged or very acute angles*; leaves 2-5 cm. long, lanceolate,  
coarsely serrate 9
9. Plant a much-branched *glabrous* shrub 3-6 ft. tall; stem-leaves *opposite*;  
fruit  $\pm$  6 mm. long (far E. Gippsland from Suggan Buggan to Mt.  
Tingaringy):

*H. racemosa* Labill. *Nov. Holl. Plant. Specim. 1*: 100, t. 128 (1806).

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Shrubby Raspwort. *Distr.*: VZ—also N.S.W., W.A. (typical).

[Victorian plants are referable to the var. *bauerlenii* (F. Muell., *ut sp.*) Schindl. in *Pflanzenreich* IV 225 (Heft 23): 59 (1905), distinguishable from the typical W.A. form by their much longer anthers (3-4 mm.).]

—Plant <2 ft. high, often glandular-pubescent; stem-leaves alternate;  
fruit  $\pm$  4 mm. long (Mallee):

*H. odontocarpa* F. Muell. *Fragm. Phyt. Aust. 1*: 108 (1859).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 878 (1952); White, *Qd agric. J. new ser. 13*: t. 1 opp. 66 (1920); Mueller, *Key Syst. Vict. Plants 2*: fig. 55 (1886).

*Vern.*: Toothed Raspwort. *Distr.*: ABCFG—also S.A., N.S.W., Qd, Cent. Aust.

10. Stems *procumbent*, *rooting* at the nodes in mud; leaves *glabrous*, up to  
5 cm. long, once or twice *pinnatisect*; sepals, petals and styles 2  
(rarely 3):

*H. brownii* (Hook. f.) Schindl. in *Pflanzenreich* IV 225 (Heft 23): 54 (1905).

*Meionectes brownii* Hook. f. in Hook. *Icon. Plant. 4*: t. 306 (1841).

*Illust.*: Hooker (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 876 (1952); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 55 fig. 16 C-D (1905)—flowers.

*Vern.*: Raspwort. *Distr.*: DEJNPTW—also W.A., S.A., Tas., N.S.W.

—Stems *erect*; flowers 4-partite 11

11. Leaves usually *asperous*, *lanceolate*, entire or toothed; fruit obscurely  
ribbed, transversely wrinkled or tuberculate, minutely *hispid*:

*H. heterophylla* Brongn. *Bot. (Phan.) Voy. La Coquille* t. 68A (?1829).

*Illust.*: Brongniart (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 100 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 873 (1952); Bailey, *Weeds & susp.*

*poison. Plants Qd 54* (1906); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 47 fig. 13 F-H (1905)—flowers; Burbidge, *Flor. Aust. Cap. Terr.* fig. 270 (1970).

*Vern.*: Raspwort. *Distr.*: ABCDEFGJKMNPSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust.

[The var. *aspera* (Lindl., *ut sp.*) Schindl. in *Pflanzenreich* IV 225 (Heft 23): 46 (1905) is a more densely hispid form, characteristic of drier inland areas.]

—Leaves *smooth*; fruit *hairless*, not ribbed and wrinkled 12

12. Leaves *narrow-linear*, with hard white tips, *entire* or with 1 or 2 linear lobes; flowers on short deflexed pedicels; fruit *smooth*, not ribbed (far S.W. region):

*H. digyna* Labill. *Nov. Holl. Plant. Specim. 1*: 101, t. 129 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 875 (1952); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 50 fig. 15 E (1905)—flower.

*Vern.*: Raspwort. *Distr.*: E—also W.A., S.A., N.S.W.

—Leaves *lanceolate*, usually *denticulate* 13

13. Plant *glaucous*; stems *terete*; fruit *globular*, *irregularly wrinkled* (Mallee and Murray Valley):

*H. glauca* Lindl in Mitch. *J. Exped. trop. Aust.* 91 (1848).

*Illust.*: Ewart, *Flor. Vict.* fig. 308 (1931)—flower; Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 47 fig. 13 C-E (1905)—flower.

*Vern.*: Raspwort. *Distr.*: ACFGR—also N.S.W., ? S.A.

—Plant *green or reddish*; stems *acutely 4-angled*; fruit *pyriform*, with 4 shallow grooves (S.W. coast at Curdie's R.):

*H. exalata* F. Muell. in *Proc. roy. Soc. Vict.* 24: 134 (1888).

*Illust.*: Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 50 fig. 15 A-B (1905)—flowers.

*Vern.*: Square Raspwort. *Distr.*: EK—also S.A., N.S.W., Qd.

#### MYRIOPHYLLUM L. (1753)

1. Leaves (at least the lower or submerged ones) *pinnate*; plants mostly aquatic 4

Leaves all *entire* (rarely with 1 or 2 lobes in *M. pedunculatum*); plants usually on wet soil 2

2. Stems 1-2" long; leaves mostly *alternate*, 2-5 mm. long; stamens 2-4 (widespread in lowlands):

*M. integrifolium* (Hook. f.) Hook. f. *Flor. Tasm. 1*: 123 (1856).

*Pelonastes integrifolia* Hook. f. in Hook. *Lond. J. Bot.* 6: 475 (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm. 1*: t. 23 fig. A, col. (1856); Black, *Flor. S. Aust.* ed. 2: fig. 884 (1952); Williamson, *Vict. Nat.* 44: 327 fig. 1 (1928); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 103 (1905).

*Vern.*: Water-milfoil. *Distr.*: CDEJMNR—also W.A., S.A., Tas., N.S.W.

- Stems usually  $>2''$  long; leaves *opposite*; stamens 8 3  
 3. Leaves *linear, acute*, usually  $<6$  mm. long; male flowers sometimes stalked; fruit *tuberculate* (sea-level to alpine bogs):

*M. pedunculatum* Hook. f. in Hook. *Lond. J. Bot.* 6: 474 (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 23 fig. B, col. (1856); Williamson, *Vict. Nat.* 44: 327 fig. 3 (1928).

*Vern.*: Mat Water-milfoil. *Distr.*: DEJNRSTVWZ—also Tas., N.S.W., A.C.T., N.Z.

- Leaves *obovate-oblong*, blunt, mostly 6-8 mm. long; flowers all sessile; fruit smooth (near-coastal tracts of south, often in shade):

*M. amphibium* Labill. *Nov. Holl. Plant. Specim.* 2: 70, t. 220 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 268, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 880 (1952); Williamson, *Vict. Nat.* 44: 327 fig. 2 (1928); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 84 fig. 24 f (1905).

*Vern.*: Broad Water-milfoil. *Distr.*: CDEJKPST—also W.A., S.A., Tas.

4. Leaves *opposite* (or rarely in whorls of 3), *all pinnate* with filiform lobes,  $<15$  mm. long; male flowers 1 or 2 together on a slender peduncle each subtended by a broad hooded bract (near-coastal):

*M. muelleri* Sond. in *Linnæa* 28: 233 (1856-57).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 883 (1952); Williamson, *Vict. Nat.* 44: 327 fig. 7 (1928); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 95 (1905).

*Vern.*: Hooded Water-milfoil. *Distr.*: EJKNP—also W.A., S.A.

- Leaves normally *all whorled*; male flowers *sessile*, *not* subtended by bracts 5

5. Leaves normally 4 per whorl, emergent ones *oblong to broad-lanceolate* 7  
 Leaves usually in whorls of 5-6, the uppermost *linear* 6

6. Foliage *bright green*, the upper leaves *emergent* and entire; female flowers devoid of sepals and petals (extremely widespread and frequent):

*M. propinquum* A. Cunn. in *Ann. nat. Hist.* 3: 30 (1839).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 270, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 881 (1952); Ewart, *Flor. Vict.* fig. 309 (1931); Williamson, *Vict. Nat.* 44: 327 fig. 6 (1928).

*Vern.*: Water-milfoil. *Distr.*: ACDEHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

- Foliage  $\pm$  *glaucous*, all the leaves *submerged* and pectinately divided; female flowers with 4 sepals  $\pm$  1.5 mm. long (eastern waterways of Port Phillip Bay, also Lakes Entrance):

\**M. brasiliense* Cambess in St. Hil. *Flor. Brasil. merid.* 2: 252 (1829).

*Illust.*: Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 88, 97 fig. 28 k (1905); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 280 (1957).

*Vern.*: Parrot's Feather. *Distr.*: NPW—also Tas., N.S.W., Qd.

7. Emerged floral leaves obtusely ovate, mostly entire, 5-10 mm. long, grey-green; fruitlets smooth:

*M. elatinoides* Gaudich. in *Ann. Sci. nat.* 5: 105 (1825).

*Illust.*: Ewart, *Flor. Vict.* fig. 310 (1931); Schindler in Engler, *Pflanzenreich* IV 225 (Heft 23): 92 (1905); Wettstein, *Handb. Syst. Bot.* ed. 4: 800 (1935); Williamson, *Vict. Nat.* 44: 327 fig. 4 (1928).

*Vern.*: Water-milfoil. *Distr.*: ACDEHJKMNPTVW—also W.A., S.A., Tas., N.S.W., N.Z.

—Emerged floral leaves *pinnatifid* with short obtuse lobes, mostly <5 mm. long; whole plant usually *flesh-pink* to coral-red; fruits  $\pm$  *tuberculate*:

*M. verrucosum* Lindl. in *Mitch. J. Exped. trop. Aust.* 384 (1848).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 269, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 882 (1952); Williamson, *Vict. Nat.* 44: 327 fig. 5 (1928); Burbidge, *Flor. Aust. Cap. Terr.* fig. 271 (1970).

*Vern.*: Water-milfoil. *Distr.*: ABCDEFJNWZ—also W.A., S.A., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust.

### Family CALLITRICHACEÆ

[The transference of this family by J. Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 445, 449 (1959), from its Englerian arrangement against *Euphorbiaceæ*—in the *Geraniales*—to the *Lythrales*, is here adopted.]

### CALLITRICHE L. (1753)

[Adapted from key by Ruth Mason in *Aust. J. Bot.* 7<sup>o</sup>: 303 (Dec. 1959).]

1. Fruit *no broader than long*; plants usually aquatic 4  
Fruit conspicuously *broader than long*; plants *terrestrial*, prostrate 2
2. Leaves rhomboidal,  $\pm$  apiculate, petiolate, 2.5-7.5  $\times$  1.5-5 mm., sometimes with a single obscure *tooth on each side*; fruit-wing *very conspicuous*,  $\pm$   $\frac{1}{2}$  the width of mericarp; fruit 1.2-1.4 mm. broad (damp cool soil, in shady places from Lower Glenelg R. to far E. Gippsland):

*C. muelleri* Sond. in *Linnæa* 28: 229 (1856-57).

*Illust.*: Mason, *Aust. J. Bot.* 7<sup>o</sup>: 308 fig. 1 a-b, 309 fig. 1 a-d (1959); Williamson, *Vict. Nat.* 44: 330 fig. 11 (1928).

*Vern.*: Round Water Starwort. *Distr.*: DEKNTWZ—also N.S.W., Qd, N.Z.

—Leaves *not* as above; fruit-wing, if present, much  $< \frac{1}{2}$  the width of mericarp 3

3. Leaves  $\pm$  1.5 mm. long, 0.5 mm. wide; fruit *dark brown*, manifestly *verruculose*, 0.7 mm. broad, umbonate and *much thicker at base* than above; styles *minute*, <0.5 mm. long; floral bracts *present* (drying mud of Murray Valley and near You Yangs):

*C. sonderi* Hegelm. in *Verh. bot. Ver. Brandenb.* 9: 18 fig. 11-14 (1867).

*Illust.*: Hegelmaier (*l.c.*); Mason, *Aust. J. Bot.* 7<sup>2</sup>: 308 fig. 2 a-d, 309 fig. 2 a-b (1959).

*Vern.*: Matted Water Starwort. *Distr.*: AN—also S.A., N.S.W., Qd.

—Leaves 1·6-7 mm. long, 0·7-5·0 mm. wide; fruit *pale brown, not verrucose*, 0·8-1·3 mm. broad, *no thicker* at base than above; styles 1·2-1·5 mm. long; floral bracts *absent* or very rare (Apollo Bay and near Mt. Disappointment):

*C. brachycarpa* Hegelm. in *Verh. bot. Ver. Brandenb.* 10: 115-16 fig. 4 & 4A (1868).

*Illust.*: Hegelmaier (*l.c.*); Mason, *Aust. J. Bot.* 7<sup>2</sup>: 308 fig. 4 a-b, 309 fig. 4 a-b (1959).

*Vern.*: Water Starwort. *Distr.*: KN—also Tas.

4. Lower, earlier leaves *3-nerved*, linear-spathulate to *spathulate*; upper leaves 3- to 7-nerved, forming distinct rosettes; bracts white, conspicuous; fruits *pale*, 1·2-1·7 mm. broad, conspicuously winged all round; styles recurved in fruit, 2·0-3·5 mm. long, but brittle and the extremities often missing in herbarium material (very widespread on still, shallow waters from sea-level to the subalps):

\**C. stagnalis* Scop. *Flor. carniolica* 251 (1860).

*C. verna* sens. Ewart *Flor. Vict.* 731 (1931), *non* L. (1755).

*Illust.*: Mason, *Aust. J. Bot.* 7<sup>2</sup>: 318 fig. 10 a-b, 319 fig. 10 a-e (1959); Ross-Craig, *Drawings Brit. Plants* 11: t. 8 (1958); Curtis, *Student's Flor. Tasm.* 1: fig. 48 (1956); Cleuter in Robyns, *Flor. Congo Belge* 7: 350 (1958); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1008, col. (1921); Burbidge, *Flor. Aust. Cap. Terr.* fig. 245 (1970).

*Vern.*: Water Starwort. *Distr.*: CDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Lower, earlier leaves *1-nerved*, linear; fruits *brown or black*; styles <2 mm. long

5. Fruit *not* or scarcely thicker at base than above 5  
Fruit manifestly *thicker* at base than above 6  
6. Fruit 1 mm. long or more, *conspicuously winged*, *umbonate* at base; styles  $\pm$  0·6 mm. long, *spreading* (scattered from Port Phillip to far S.W., also Goulburn R.):

*C. umbonata* Hegelm. in *Verh. bot. Ver. Brandenb.* 9: 19 fig. 1-10 (1867).

*Illust.*: Hegelmaier (*l.c.*); Mason, *Aust. J. Bot.* 7<sup>2</sup>: 308 fig. 5 a-c, 309 fig. 5 a-b (1959).

*Vern.*: Water Starwort. *Distr.*: CEJNP—also Tas., N.S.W.

—Fruit <0·9 mm. long, *scarcely winged*, *not umbonate*; styles  $\pm$  1·5 mm. long, *erect* (scattered and apparently endemic in N. & W. Victoria):

*C. cyclocarpa* Hegelm. in *Verh. bot. Ver. Brandenb.* 10: 116 fig. 12 & 12A (1868).

*Illust.*: Hegelmaier (*l.c.*); Mason, *Aust. J. Bot.* 7<sup>2</sup>: 318 fig. 12 a-b, 319 fig. 12 a-c (1959).

*Vern.*: Water Starwort. *Distr.*: CEGN.

7. Fruit *sessile*, manifestly *longer than wide*, <1 mm. broad; styles *erect*; bracts present, conspicuous; stamens up to 5 mm. long (scattered along Murray R. and tributaries):

*C. palustris* L. *Spec. Plant.* 2: 969 (1753).

*C. verna* L. *Flor. suec.* ed. 2: 2 (1755).

*Illust.*: Mason, *Aust. J. Bot.* 7<sup>2</sup>: 318 fig. 13 a-b, 319 fig. 13 a-b (1959).

*Vern.*: Water Starwort. *Distr.*: GMRV—also ?N.S.W., N.G., N. Caled. etc.

- Fruit sometimes *on long peduncles* (especially in lowermost axils), almost *circular*, 1.0-1.4 mm. broad; styles 1-1.5 mm., *deflexed* close to fruit, but deciduous; bracts *absent* or quite inconspicuous; stamens  $\pm$  1 mm. long (dispersed in W. Victoria, also Winton Swamp):

\**C. hamulata* Kützing in Koch *Synops. Flor. germ. & helv.* ed. 2, 1: 271 (1843).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 11: t. 11 (1958); Mason, *Aust. J. Bot.* 7<sup>2</sup>: 318 fig. 11 a-b, 319 fig. 11 a-c (1959).

*Vern.*: Water Starwort. *Distr.*: DEJKNR—also N.Z. (orig. Europ.).

### Family ARALIACEÆ

1. Leaves *pinnate, glabrous*; fruit *succulent*, grey-pink or pale bluish (tall forest shrub) Tieghemopanax (p. 475)  
Leaves *simple* 2
2. Foliage and stems variously *stellate-tomentose*; leaves *entire*; fruit *pale*, of 2 *dry mericarps* (slender shrubs) Astrotricha (p. 474)  
Foliage and older stems *glabrous*; leaves *palmately 3- to 5-lobed*; fruit *globose, berry-like, almost black* (tall climber with adhesive aerial roots) \*Hedera (p. 476)

### ASTROTRICHA DC. (1829)

1. Leaves 2-7 mm. wide, but varying from 1 to 9 cm. long, distinctly *petiolate*, quite flat or the margins slightly recurved 4  
Leaves 1-2 mm. wide, almost *sessile*, the margins *strongly recurved* to tightly revolute 2
2. Leaves *completely smooth* and usually shining on outer surface, 2-3 cm. long, 1.5-2 mm. wide, suberect, subsessile; vestiture dense and felty (confined in Victoria to the Suggan Buggan region, far E. Gippsland):

*A. crassifolia* Blakely in *Proc. Linn. Soc. N.S.W.* 50: 385 (1925).

*Vern.*: Thick-leaf Star-hair. *Distr.*: V—also N.S.W.

—Leaves *not* smooth on outer surfaces 3

3. Vestiture *dense, felty*; leaves 1-3" long, 1-1.5 mm. wide,  $\pm$  *erect*, subsessile, the outer surfaces *dull* and scabrous (scattered through E. & N.E. districts, with an isolated western occurrence at Mt. Macedon):

*A. linearis* A. Cunn. ex Benth. in Endl. et al. *Enum. Plant. Hueg.* 55 (1837).

*Vern.*: Star-hair. *Distr.*: NRTV—also N.S.W.

—Vestiture *sparse and fine*; leaves <1" long (usually 1-2 cm.), 1-2 mm. wide, mostly *reflexed* from the base, sessile, the outer surfaces *shiny* but sprinkled with *large acute tubercles* at least toward the margins (apparently endemic in Central Gippsland, between Mt. Wellington, Bairnsdale & Seaspray):

*A. parvifolia* N. A. Wakefield in *Vict. Nat.* 73: 168 (1957).

*Vern.*: Small-leaf Star-hair. *Distr.*: SWX.

4. Upper surfaces of leaves *very minutely asperous* (rarely quite smooth), often flat; vestiture of *minute stellate hairs*, the stellæ  $\pm$  0.1 mm. wide (E. & N.E. highland areas):

*A. ledifolia* DC. *Coll. dix Mém.* 5: 30, t. 6 (1829).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 397, col. (1968); *Wild Life* 6: 276 (1944); King, *Wild Life* 8: 68 (1946); Burbidge, *Flor. Aust. Cap. Terr.* fig. 287 (1970).

*Vern.*: Common Star-hair. *Distr.*: RSTVWZ—also N.S.W., A.C.T., Qd.

—Upper surfaces of leaves  $\pm$  *wrinkled* and copiously armed with both *large and small sharp tubercles*, the margins often recurved; vestiture of *large, usually coarse hairs*, the stellæ 0.2-0.6 mm. wide; inflorescence widely spreading, to 3" or more (Grampians, Pyrenees, and wide-spread through E. & N.E. forest-land—apparently endemic in Vic.):

*A. asperifolia* F. Muell. ex Klatt in *Linnaea* 29: 709 (1858).

*Vern.*: Rough Star-hair. *Distr.*: CDHJMNRSTWZ.

[In Ewart's *Flor. Vict.* 888-889 (1931) the preceding 5 taxa were all included under a wide circumscription of *A. ledifolia* DC.]

#### TIEGHEMOPANAX Viguier (1905)

Leaves *bipinnate to tripinnate*, the ultimate pinnules (secondary or tertiary) coarsely *lobed or pinnatifid* (rarely entire); all pinnules and lobes  $\pm$  2-3 mm. wide, acuminate, with entire margins (ridges and drier forested slopes of E. Gippsland between the Tambo R. & Mt. Tingaringy):

*T. multifidus* N. A. Wakefield in *Vict. Nat.* 73: 167 (1957).

*Vern.*: Ferny Panax. *Distr.*: WZ—also N.S.W.



Leaves *simply pinnate* (rarely bipinnate), the leaflets *entire* (widespread in forested country of Cent. & E. Victoria):

*T. sambucifolius* (Sieber ex DC.) Viguier in *Bull. Soc. bot. Franc.* 52: 310 (1905).

*Panax sambucifolium* Sieber ex DC. *Prodr.* 4: 255 (1830).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 407, col. (1968); Gordon in Ewart, *Handb. For. Trees* t. 201 (1925); *Curtis's bot. Mag.* 100: t. 6093, col. (1874), as *Panax sambucifolius*; Mueller, *Key Syst. Vict. Plants* 2: fig. 62 (1886), as *P. sambucifolius*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 286 (1970).

*Vern.*: Elderberry *Panax* or Elderberry Ash. *Distr.*: KNRSTVWZ—also N.S.W., A.C.T.

[The species is so variable in foliage that it has been found impracticable to recognize any subordinate taxa based on this feature. The typical form, ranging from the Blue Mtns. to New England region of N.S.W., does exhibit denticulate and  $\pm$  acuminate leaflets, but in Victoria toothed leaflets occur only on immature plants. Invariably in the subalps, and often also in the lowlands, leaflets are linear and obtuse (as little as 2-4 cm.  $\times$  2-3 mm.). In moist lowland forest the leaflets may be lanceolate to broadly ovate and acute or obtuse (up to 5" long  $\times$  3" wide); this large- and broad-leaved development is occasionally bipinnate. Late in 1971 *T. murrayi* (F. Muell.) Viguier was located in Howe Ranges near the N.S.W. border; it is a straight slender tree 40-60ft. with large terminal leaves (2-4ft.) and leaflets 3-10".]

#### \**HEDERA* L. (1753)

\**H. helix* L. *Spec. Plant.* 1: 202 (1753).

*Illust.*: *Exotica* 3: 256-269 (1963)—97 photos of horticultural forms; Ross-Craig, *Drawings Brit. Plants* 13: t. 28 (1959); Perrin, *Brit. flowering Plants* 3: t. 185, col. (1914); Petts in Meikle, *Brit. Trees & Shrubs* fig. 32 opp. 94 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 190 fig. 4, also 5\*: fig. 2289-2294 (1925); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1263, col. (1922); Coste, *Flor. Franc.* 2: fig. 1641 (1903).

*Vern.*: Ivy. *Distr.*: NPW—also N.S.W., Tas.

#### Family UMBELLIFERÆ [Apiaceæ]

1. Lobes of leaves *spine-tipped*; flowers in dense, bluish, *thistle-like heads* surrounded by an involucre of prickly bracts, each ovary beset with white *vesicular scales* *Eryngium* (p. 487)  
Leaves not spiny or, if rarely so, then flowers *never* capitate 2
2. Flowers 6-10, crowded into a head with as many *radiating involucrel bracts*; leaves  $\pm$  *entire*, spatulate, villous, <15 mm. long (very rare plant of wet alpine peat on Baw-Baws) *Actinotus* (p. 486)  
Flowers in umbels or heads without conspicuous involucre; leaves not as above 3
3. Leaves (and their lobes) *without* any transverse partitions 5  
Leaves or their lobes jointed *with transverse septa* (either alpine or semi-aquatic herbs) 4

4. Flowers *numerous, unisexual*, in large *conspicuous compound umbels* (erect, diœcious alpine plants) *Aciphylla* (p. 492)  
 Flowers *few, bisexual*, in small *simple umbels* (weak prostrate herb of lowland swamps and stream-sides) *Lilæopsis* (p. 491)
5. Fruit hispid, with a long, sterile, *awl-like beak* (2-6 cm.); leaves 2- to 3-pinnate *\*Scandix* (p. 487)  
 Fruit *not* or only very shortly beaked 6
6. Fruit smooth or rough but *never bristly* (if sometimes muricæte, then shortly beaked) 9  
 Fruit beakless, *beset with spines or bristles* (manifest on ovary even at flowering stage) 7
7. Mericarps *flattened*, almost as broad as long, irregularly and densely covered with *soft barbellate bristles*, without oil-canals (small N.W. annuals <5" tall, the leaves *palmatisect*) *Trachymene* (p. 484)  
 Mericarps *not* sensibly flattened, longer than broad, with *coarse rigid prickles* and an oil-canal between each primary ridge (leaves *bipinnatisect*) 8
8. Umbels *long-pedunculate*, compound; fruits *not tuberculate* between the prickles which are arranged *along the ribs* *Daucus* (p. 492)  
 Umbels *sessile*, leaf-opposed; fruits *tuberculate*, the outer mericarps of outer-most fruits prickly *all over* *\*Torilis* (p. 488)
9. Umbels regularly *compound* 18  
 Umbels *simple* (but sometimes on long di- or trichotomous inflorescences) 10
10. Leaves *without stipules* 12  
 Leaves *stipulate*, the blade *rounded* in outline and  $\pm$  crenulate to palmately lobed 11
11. Umbels all *pedunculate*; sepals *minute* and inconspicuous; mericarps attached along their *narrower faces* *Hydrocotyle* (p. 479)  
 Umbels *sessile* or nearly so; sepals *petaloid*, half as long as petals; mericarps attached along their *broadier faces*, the fruit  $\pm$  4-angled (glabrous plant of damp shaded rocky places in higher alps) *Schizeilema* (p. 486)
12. Leaves *toothed or dissected* 14  
 Leaves all *entire*, the blade  $\pm$  cordiform 13
13. Leaf-blade >15 mm. long; umbels of only 3-4 flowers,  $\pm$  sessile or on peduncles *much shorter than leaves*; mericarps *semicircular*, attached by their *narrower faces*, the broad faces prominently *ridged and reticulate* *Centella* (p. 482)  
 Leaf-blade <12 mm. long; umbels on stout peduncles *as long as leaves*; mericarps *ovate*, attached by their *broadier faces* which have a thin central rib but *no reticulations* (alpine bogs) *Diplaspis* (p. 486)
14. Leaf-blade *cordate*, oval-orbicular to reniform, *crenulate*; flowers 3-4 in umbellate clusters (creeping perennial, *rooting at the nodes* in wet places) *Centella* (p. 482)  
 Leaf-blade *never cordate*; flowers >4 together (habit *not stoloniferous*) 15
15. Umbels irregular, few-flowered (2-9) in a long *leafless, dichotomously*

*branched inflorescence*; leaves radical, *narrowly cuneate* and long-petiolate, 3- to 7-toothed at the end (alps and subalps)

*Oschatzia* (p. 486)

Umbels *not* in dichotomous inflorescences; leaves *never* long-cuneate with distal-teeth 16

16. Mericarps much flattened, *not* or only inconspicuously ribbed; involucre bracts *narrow-linear*, *shorter than flowers*; calyx-teeth minute

*Trachymene* (p. 484)

Mericarps with several *conspicuous vertical ribs*; involucre bracts prominent, *lanceolate to ovate or obovate*, as long as or longer than flowers (leaves all deeply cut) 17

17. Sepals *prominent and pointed*; mericarp with  $\pm 9$  ribs but lacking oil-canals (lowland plants) *Xanthosia* (p. 485)

Sepals *obsolete*; mericarp with 5 prominent ribs and as many or more intervening oil-canals (montane to alpine herbs with finely pinnatisect, ferny foliage) *Oreomyrrhis* (p. 488)

18. Petals broad and distinctly yellow or leaves divided into few distant long-linear pinnæ; fruit attached by a *broad commissure* and traversed by oil-canals 27

Petals white, pink or greenish; fruit attached by a *narrow commissure*, with or without oil-canals 19

19. Leaves *pinnate to deeply bi- or tripinnatisect*; sepals obsolete 22

Leaves entire, toothed or variously palmatisect; fruit without oil-canals 20

20. Involucre bracts *broad and conspicuous*, as long as umbels; sepals *prominent*, at least half as long as ovary; mericarps  $\pm 9$ -ribbed

*Xanthosia* (p. 485)

Involucre bracts *narrow-linear*, much shorter than umbels; sepals *minute*; mericarps *not* or only obscurely ribbed, often  $\pm$  tuberculate 21

21. Leaves *ternately palmatisect*, the radical ones *long-petiolate*; mericarps very flattened (annual or biennial herbs) *Trachymene* (p. 484)

Leaves *entire* (or a few lower ones trifid) mericarps  $\pm$  *turgid* (shrubs or perennial herbs) *Platysace* (p. 483)

22. Leaves *simply pinnate*, the 14 or more broad pinnæ finely and *regularly serrate*; involucre bracts usually as long as umbels (plant of wet ground) *Sium* (p. 491)

Leaves with variously *divided pinnæ*; involucre bracts shorter than umbels 23

23. Plant  $\pm$  hairy, the blackish muricate fruits conspicuously beaked and without oil-canals *\*Anthriscus* (p. 493)

Plant totally *glabrous*; fruits *never beaked* 24

24. Stems robust,  $\pm$  glaucous, *purple-spotted*; leaves to 1 ft. long, fern-like, 2-4 times pinnate, rankly odorous; fruit *without* oil-canals; seeds *curved* in cross-section (poisonous weed) *\*Conium* (p. 489)

Stems *never* purple-spotted; fruit *bearing oil-canals*; seeds *straight* in cross-section 25

25. Bracts *numerous*, long, *pinnatifid*; petals deeply and *unequally 2-lobed*; fruits oblong (weed 2-4 ft. high) *\*Ammi* (p. 489)

- Bracts *few or none*, mostly *entire*; petals *entire* or only slightly notched; fruits *ovoid* 26
26. Fruit *coarsely* ribbed,  $\pm$  1.5 mm. long; style-base *depressed*; inflorescence often *leaf-opposed* *Apium* (p. 490)  
Fruit *finely* ribbed,  $\pm$  2.5 mm. long; style-base *low-conical*; inflorescence always *terminal* (leaves 3-pinnate, with cuneate and often much crisped segments—biennial garden escape) \**Petroselinum* (p. 490)
27. Leaves *simply pinnate*, with *lobed ovate segments*; flowers numerous, *yellow*; fruit *flat, winged*, oval to orbicular, 5-8 mm. long (*biennial* garden escape, 2-4 ft. high) \**Pastinaca* (p. 492)  
Leaves mostly *once pinnate*, with distant *entire linear segments*; flowers *few whitish*; fruit *oblong* 3-6 mm. long (*subalpine perennial* to 1.5 ft.) *Seseli* (p. 491)  
Leaves *repeatedly divided* into filiform segments; flowers numerous, *yellow*; fruit *ovoid*, 4-6 mm. long (*strongly anise-scented perennial* weed of damper waste places, 4-8 ft. tall) \**Feniculum* (p. 491)  
Leaves *simple, entire*; flowers *yellow*; fruit *ovoid*, 2-3 mm. long (*glaucous annual* to 1 ft. high) \**Bupleurum* (p. 493)

## Tribe HYDROCOTYLÆ

## HYDROCOTYLE L. (1753)

1. Plants diminutive, *annual*, the stems *never* rooting at nodes; fruit with 4 large or many small pits, sometimes rugulose, the carpophores *persisting* after fall of mericarps 11  
Plants *perennial*, branching, their stems often *rooting at the nodes*; fruit with *smooth faces*, the carpophores *falling* with mericarps 2
2. Leaf-blade orbicular, with stalk attached *at the centre*, obscurely crenulate, glabrous; flowers small, white, subsessile; fruit  $\pm$  3 mm. broad (wet places in lowlands):
- H. verticillata* Thunb. *Diss. Hydrocotyle* 5 (1798).  
*H. vulgaris* sens. Ewart *Flor. Vict.* 894 (1931) atque auctt. Aust., non L. (1753).  
*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 885 G & 888 (1952); Williamson, *Vict. Nat.* 44: 330 fig. 8 (1928)—both as *H. vulgaris*.  
*Vern.*: Shield Pennywort. *Distr.*: EJKMNRSTVWXZ—also S.A., N.S.W., Qd.

—Leaf-blade *not* peltately attached 3

3. Mericarps flat,  $\pm$  2 mm. broad, bearing *prominent dorsal wings*  $\pm$  0.5 mm. wide; flowers subsessile, in clusters on very short peduncles; leaves glabrous, orbicular to reniform, with a deep sinus (swampy southern localities):
- H. pterocarpa* F. Muell. in *Trans. Vict. Inst.* 126 (1855).  
*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 885 A & 889 (1952); Fitch in Hooker f.,

*Flor. Tasm.* 1: t. 33 fig. B & C, col. (1856); Drude in Engler, *Natürl. PflFam.* III 8: fig. 47 F-H (1897).

*Vern.*: Wing Pennywort. *Distr.*: DEKNPZ—also S.A., Tas., N.S.W., N.Z.

—*Mericarps without definite wings* 4

4. Flowers few or many, *sessile* or *subsessile* (pedicels never 2 mm. long) 6  
Flowers numerous, *on pedicels* 2-3 mm. long or more (several times as long as flowers) 5
5. Leaves *digitately divided* almost (or quite) to the petiole into 3-5 *acute*, *lanceolate*, strongly toothed segments, *sparsely* pubescent; stipules *fringed*; stems tender, *very weak*, elongated, branched, sometimes rooting at nodes; flowers *white*, *bisexual*; dorsal rib of mericarp wing-like (shaded forests):

*H. geraniifolia* F. Muell. in *Trans. Vict. Inst.* 126 (1855).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 119 (1967).

*Vern.*: Forest Pennywort. *Distr.*: NSTXZ—also N.S.W.

—Leaves *reniform*, *crenate*, the stems short and erect or decumbent, *a densely* pubescent; stipules usually *entire*; flowers *greenish*, mostly *unisexual* (the males on longer stalks), with an offensive indolic odour (very widespread):

*H. laxiflora* DC. *Prodr.* 4: 61 (1830).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 350, col. (1968); Willis in *Aust. Encycl.* 5: 50 (1958); Burbidge, *Flor. Aust. Cap. Terr.* fig. 272 (1970).

*Vern.*: Stinking Pennywort. *Distr.*: CDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

6. Corolla at anthesis *not* or hardly as wide as ovary, usually pale yellow; flowers *sessile*; fruits usually >15 per umbel, *blackish-brown* when ripe; leaves rounded, crenate, *densely pubescent on both surfaces* with crisped hairs:

*H. hirta* R. Br. ex A. Rich. in *Ann. Sci. Phys.* 4: 204 (1820).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 120 (1967); Wakefield, *Vict. Nat.* 68: 8 fig. 4 (1951)—leaf; Bailey, *Weeds & susp. poison. Plants Qd* fig. 107 (1906).

*Vern.*: Hairy Pennywort. *Distr.*: CDEFHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., Qd.

[In *Blumea* 2: 122-128 (1936) and in *Flor. Malesiana* 4<sup>1</sup>: 115 (1949) P. Buwalda has included *H. hirta* under a wider circumscription of *H. javanica* Thunb. *Diss. Hydrocotyle*: 3 n. 17, 6, t. 2 (1798)—a tropical species having in general much larger leaves (to 2" wide) that are less hairy. Most Australian systematists prefer to recognize *H. hirta* as distinct at the specific level.]

—Corolla at anthesis much *wider than the ovary*, often reddish; flowers *subsessile to pedicellate*; fruits up to 15 per umbel, *yellowish to olive-brown* when ripe 7

7. Leaves with *upper surface glabrous* or with comparatively few long, straight bristle-like hairs (whole plant sometimes glabrous) 9  
 Leaves densely *pubescent on both sides* with short curved hairs 8
8. Leaf-blade rounded, crenate, *never acutely lobed, very pale beneath*; peduncles mostly *exceeding the petioles* (alpine and subalpine herb):

**H. algida** N. A. Wakefield in *Vict. Nat.* 72: 55 (1955).

*Vern.*: Pennywort. *Distr.*: RSVW—also N.S.W. (Kosciusko area).

—Leaf-blade with *acute lobes* (when small), much broader than long (when large), with a broad shallow sinus; peduncles mostly *shorter than the petioles* (stream-banks and jungles of E. Gippsland):

**H. acutiloba** (F. Muell.) N. A. Wakefield in *Vict. Nat.* 68: 7 (1951).

*H. hirta* R. Br. ex A. Rich. var. *acutiloba* F. Muell. *Fragm. Phyt. Aust.* 4: 181 (1864).

*Illust.*: Wakefield, *Vict. Nat.* 68: 8 fig. 7 (1951)—leaf.

*Vern.*: Pennywort. *Distr.*: Z—also N.S.W.

9. Leaves entire or shallowly (rarely deeply) lobed (widespread, and often a weed in lawns):

**H. sibthorpioides** Lam. in *Encycl. méth. (Bot.)* 3: 153 (1789).

*H. hirta* sens. Ewart *Flor. Vict.* 895 (1931) pro parte, non R. Br. ex A. Rich. (1820);

*H. peduncularis* R. Br. ex A. Rich. in *Ann. Sci. Phys.* 4: 202, t. 61 fig. 26 (1820).

*Illust.*: Richard (l.c.); Wakefield, *Vict. Nat.* 68: 8 fig. 3 (1951)—leaf, as *H. peduncularis*; Hooker f., *Flor. Tasm.* 1: t. 32 fig. A & B, col. (1856), as *H. tasmanica* & *H. peduncularis* resp., also t. 33 fig. A, col. (1856), as *H. vagans*.

*Vern.*: Pennywort. *Distr.*: CDEHJKMNPRSTVWZ—also Tas., N.S.W., A.C.T., N.G.

—Leaves *divided to the petiole* into cuneate leaflets

10

10. Leaflets 3, the outer 2 often bilobate:

**H. tripartita** R. Br. ex A. Rich. in *Ann. Sci. Phys.* 4: 209, t. 61 fig. 25 (1820).

*Illust.*: Wakefield, *Vict. Nat.* 68: 8 fig. 5 (1951)—leaf; Hooker, *Icon. Plant.* 4: t. 312 (1841).

*Vern.*: Pennywort. *Distr.*: EKNPRVWZ—also ?S.A., N.S.W., Qd, N.Z.

—Leaflets 5, entire or coarsely toothed (matted, near-coastal perennial with shiny foliage):

**H. muscosa** R. Br. ex A. Rich. in *Ann. Sci. Phys.* 4: 208, t. 61 fig. 27 (1820).

*Illust.*: Richard (l.c.); Wakefield, *Vict. Nat.* 68: 8 fig. 6 (1951)—leaf; Black, *Flor. S. Aust.* ed. 2: fig. 891 (1952), as *H. tripartita*.

*Vern.*: Mossy Pennywort. *Distr.*: DJEK—also S.A., Tas.

11. Fruitlets with *numerous small pits or wrinkles* (at least on the outer sides); flowers *sessile* or very shortly pedicellate

12

Fruitlets finally black, with a single large dark pit on the inner side of each of the intermediate ribs, otherwise smooth; flowers >6 (and up to 15) on slender pedicels in a stalked umbel; stipules fringed; leaf-blades deeply 3-lobed, usually cut  $\pm$  half way to base (very widespread):

**H. callicarpa** Bunge in Lehm. *Plant. Preiss.* 1: 283 (1844-45).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 893 (1952).

*Vern.*: Pennywort. *Distr.*: BCDEHJMNPRVW—also W.A., S.A., Tas., N.S.W.

—As for the last but fruitlets reddish-brown with deep white-ringed pits, flowers <6 in almost or quite sessile umbels and leaf-blades cleft to the base in 3-4 yellowish-green lobes (widespread in W. & Cent. districts, but precise range unknown because of previous confusion with *H. callicarpa*):

**H. foveolata** Hj. Eichler *Suppl. to J. M. Black's Flor. S. Aust.* (ed. 2): 248 (1965).

*Vern.*: Pennywort. *Distr.*: DJNVZ—also S.A., Tas., N.S.W.

12. Leaves cleft only to about the middle into 3 entire or crenate lobes; flowers 3-6; fruit  $\pm$  2 mm. broad, the mericarps minutely pitted along their outer (dorsal) faces, but inner faces smooth:

**H. capillaris** F. Muell. *Fragm. Phyt. Aust.* 1: 178 (1864).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 895 (1952).

*Vern.*: Pennywort. *Distr.*: ABCDEJKMNPR—also W.A., S.A., Tas., N.S.W.

—Leaves (at least the upper) deeply 3-lobed or tripartite, with the segments usually coarsely toothed; mericarps wrinkled or irregularly pitted all over

13. Flowers usually 6-12, subsessile; fruit  $\pm$  2 mm. broad, each mericarp with 3 prominent  $\pm$  wing-like ribs; stipules ciliate (chiefly on damp saline flats of W. and N.W.):

**H. medicaginoides** Turcz. in *Bull. Soc. Nat. Moscou* 22<sup>2</sup>: 27 (1849).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 892 (1952).

*Vern.*: Pennywort. *Distr.*: ACDMNP—also W.A., S.A., ?N.S.W.

—Flowers 2-4, on very short but slender pedicels; fruit  $\pm$  1.3 mm. broad, the coarsely rugose mericarps with obscure ribbing; stipules scarious, almost entire (sandy ground in far N.W. Mallee):

**H. rugulosa** Turcz. in *Bull. Soc. Nat. Moscou* 22<sup>2</sup>: 27 (1849).

*Vern.*: Mallee Pennywort. *Distr.*: ABCF—also W.A., S.A.

#### CENTELLA L. (1760)

**C. cordifolia** (Hook. f.) Nannfeldt in *Svensk. bot. Tidskr.* 18: 418 (1924).

*Hydrocotyle cordifolia* Hook. f. in Hook. *Icon. Plant.* 4: t. 303 (1841);

*H. asiatica* sens. Ewart *Flor. Vict.* 894 (1931), non L. (1753);

*C. asiatica* sens. auctt. Aust., non (L.) Urban (1879).

*Illust.*: Hooker f. (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 897 (1952), as *Hydrocotyle asiatica*; Nannfeldt in *Svensk. Bot. Tidskr.* 18: 401-2, t. 7 (1924), as *C. asiatica*.

*Vern.*: Centella. *Distr.*: CDEJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., Qd.

#### PLATYSACE Bunge (1844-45)

1. Leaves narrow-linear to filiform, a few lower ones sometimes trifid; peduncle of compound umbel very slender, 1-2.5 cm. long; corolla at anthesis not as wide as ovary; fruit dark, broader (2.5 mm.) than long (glabrous semi-shrub to  $\pm 15'$  tall, on near-coastal heaths and in Grampians):

**P. heterophylla** (Benth.) Norman in *J. Bot., Lond.* 77: 210 (1939).

*Siebera heterophylla* Benth. *Flor. aust.* 3: 354 (1867);

*Trachymene heterophylla* (Benth.) F. Muell. ex R. Tate in *Trans. roy. Soc. S. Aust.* 3: 69 (1880).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 911 (1952), as *Trachymene heterophylla*.

*Vern.*: Slender Platysace. *Distr.*: DENJTWZ—also S.A.

—Leaves linear to orbicular, all entire; corolla at anthesis at least as wide as ovary; fruit pale, about as broad ( $\pm 2$  mm.) as long (shrubs with  $\pm$  pubescent branchlets)

2. Leaves linear to subulate, mucronate, <1 cm. long; compound umbels to 1 cm. wide, on peduncles <1 cm. long (low diffuse shrub to  $\pm 1$  ft. high, between the Avon & lower Snowy Rivers, Gippsland, and rare):

**P. ericoides** (Sieber ex DC.) Norman in *J. Bot., Lond.* 77: 210 (1939).

*Trachymene ericoides* Sieber ex DC. *Prodr.* 4: 73 (1830).

*Illust.*: Banks & Solander, *Bot. Cook's Voy.* 2: t. 133 (1901).

*Vern.*: Heath Platysace. *Distr.*: SW—also N.S.W.

—Leaves lanceolate to ovate or orbicular, obtuse or acute but never mucronate, to 4 cm. long (when lanceolate); compound umbels 1-3 cm. wide, often on peduncles of 1-3 cm. (widespread variable shrub, usually 2-4 ft. high):

**P. lanceolata** (Labill.) Norman in *J. Bot., Lond.* 77: 210 (1939).

*Azorella lanceolata* Labill. *Nov. Holl. Plant. Specim.* 1: 74, t. 99 (1805);

*Trachymene billardieri* F. Muell. *Syst. Census aust. Plants* 62 (1882).

*Illust.*: Labillardière (*l.c.*); Curtis's *bot. Mag.* 61: t. 3334, col. (1834), as *Trachymene lanceolata*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 277 (1970).

*Vern.*: Shrubby Platysace. *Distr.*: CDJNRSTVWXZ—also N.S.W., A.C.T., Qd.

[Foliage within this taxon is highly variable, and attempts have been made to define varieties based upon leaf-form, with indifferent success. Ewart, *Flor. Vict.*



899 (1931), recognizes four such segregates under the synonymous name *Trachymene billardieri*, viz.: vars. *lanceolata* (typical form), *cuneata* (obovate-cuneate leaves), *ovata* (ovate leaves) and *conferta* (round-leaved); but new combinations for these under the name *P. lanceolata* do not seem to have been published.]

### TRACHYMENE Rudge (1811)

1. Flowers *numerous* in umbel (20-50 or more); mericarps *smooth to minutely tuberculate* (inflorescences often 1 ft. high or more) 3  
Flowers *few* in umbel (<13); one or both mericarps *covered with bristles* (small Mallee annuals <5" tall) 2
2. Umbels with 3-5 flowers; petals *bluish*; both mericarps *shaggy* with long soft purplish bristles:

**T. cyanopetala** (F. Muell.) Benth. *Flor. aust.* 3: 348 (1867).

*Dimetopia cyanopetala* F. Muell. *Fragm. Phyt. Aust.* 1: 231 (1859);

*Didiscus cyanopetalus* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 9: 46 (1875).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 899 (1952), as *Didiscus cyanopetalus*.

*Vern.*: Purple Trachymene. *Distr.*: ABCFG—also W.A., S.A., N.S.W., Qd.

—Umbels with 6-12 flowers; petals *white*; one mericarp *granular-rugose* but hairless, the other beset with stout but soft barbellate bristles:

**T. pilosa** Sm. in Rees *Cyclopædia* 39: (Addend. et Corrig.) sub Trachymene n. 2 (1819).

*Didiscus pusillus* (DC., ut *Dimetopia* sp.) F. Muell. *Fragm. Phyt. Aust.* 9: 47 (1875);

*D. pilosus* (Sm.) Domin in *Sber. K. böhm. Ges. Wiss.* 1908: 31 (1908), non Benth. (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 898 (1952), as *Didiscus pusillus*.

*Vern.*: Dwarf Trachymene. *Distr.*: BC—also W.A., S.A.

3. Leaf-blades *entire or bluntly and shallowly 3- to 5-lobed, glabrous*; inflorescence a *single umbel* on a *stout leafless peduncle* (varying in length from  $\pm$  1 cm. to almost 1 ft.); fruit *glabrous* (alpine or sub-alpine *perennial* with stout rootstock):

**T. humilis** (Hook. f.) Benth. *Flor. aust.* 3: 351 (1867).

*Didiscus humilis* Hook. f. in Hook. *Icon. Plant.* 4: t. 304 (1841).

*Illust.*: Hooker f. (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 514, col. (1968); Burbidge, *Flor. Aust. Cap. Terr.* fig. 273 (1970).

*Vern.*: Alpine Trachymene. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

—Leaf-blades *palmatisect* into 3 cuneate lobed segments,  $\pm$  *hairy*; inflorescence *branched, leafy*, 1-4 ft. high; fruit *minutely tuberculate* (widespread *annual or biennial herb*):

*T. anisocarpa* (Turcz.) B. L. Burtt in *J. Bot., Lond.* 79: 44 (1941).

*Dimetopia anisocarpa* Turcz. in *Bull. Soc. Nat. Moscou* 22: 29 (1849);

*Didiscus pilosus* Benth. in Endl. et al. *Enum. Plant. Hueg.* 54 (1837);

*T. australis* Benth. *Flor. aust.* 3: 349 (1867).

*Illust.*: Hooker, *Icon. Plant.* 4: t. 307 (1841), as *Didiscus pilosus*; F. C. W. in Maiden, *Agric. Gaz. N.S.W.* 5: t. opp. 691 (1894), as *Trachymene australis*.

*Vern.*: Parsnip *Trachymene* (Wild Parsnip). *Distr.*: AFPSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

[In the Sunraysia district (far N.W. Mallee) occurs a segregate of this variable species having less hairy basal leaves, non-ciliate involucre bracts, glabrous & subglaucous inflorescences and the dorsal edge of each mericarp forming 2 paler, appressed very narrow wings that are variously broken into blunt triangular teeth. From the last striking feature, the population had been referred (in Melbourne Herbarium) to *T. bialata* (Domin.) B. L. Burtt (type from Barrow Range in W.A., 95 miles W. from the N.T.-S.A. border); but the latter differs in its glandular-laciniate involucre bracts, glandular-hairy bases of peduncles and more prominent double wing edging the mericarp.]

#### XANTHOSIA Rudge (1811)

1. Leaves *cuneate*, hardly petiolate, usually <1 cm. long, the apex cleft into 3 (rarely 5) short lobes or teeth; flowers 1-3 in a simple, very shortly pedunculate umbel (Yarra watershed to E. Gippsland):

*X. tridentata* DC. *Prodr.* 4: 75 (1830).

*Vern.*: Hill Xanthosia. *Distr.*: STZ—also Tas., N.S.W.

—Leaves on *distinct (usually long) petioles*, usually divided into separate leaflets 2

2. Plant almost *glabrous*; leaves *repeatedly and ternately divided*, the blade to 3 cm. long and *much shorter* than petiole; inflorescence a cluster of 3-4 few-flowered stalked umbels (lowland heaths):

*X. dissecta* Hook. f. in Hook. *Icon. Plant.* 4: t. 302 (1841).

*Illust.*: Hooker f. (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 887 (1952)—var. *floribunda*.

*Vern.*: Cut-leaf Xanthosia. *Distr.*: CDEJKNPSTZ—also S.A., Tas., N.S.W.

—Plant usually *very pubescent*; leaves trilobed or divided into 3 leaflets, the blade about the *same length* as petiole (or slightly longer) 3

3. Stems  $\pm$  *procumbent*, up to 6" long; leaves divided into 3  $\pm$  *equal*, narrow-lanceolate, usually *entire* leaflets, *pale beneath*; umbels single, 2- to 4-flowered, *sessile or very shortly pedunculate*; fruit 3-4 mm. long (lowland heaths):

*X. pusilla* Bunge in Lehm. *Plant. Preiss.* 1: 291 (1844-45).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 885 K-L & 886 (1952).

*Vern.*: Heath Xanthosia. *Distr.*: DEJKNPTZ—also W.A., S.A., Tas.

—Stems *erect*, shrubby, 6-18" high or more; leaves deeply 3-lobed or tripartite with broad 3- to 5-lobed leaflets of which the terminal one is *by far the longest*, the under-surfaces *rusty-brownish*; umbels *in pairs*, usually 2-flowered on *longish peduncles*; fruit  $\pm$  2 mm. long (Healesville to Mallacoota, commoner in E. Gippsland):

**X. pilosa** Rudge in *Trans. Linn. Soc. Lond.* 10: 301, t. 22 fig. 1 (1811).

*Illust.*: Rudge (*l.c.*); Curtis, *Student's Flor. Tasm.* 2: 249 fig. 66 (1963); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 135 (1901); Garnet, *Wildflowers Wilson's Prom.* fig. 656 (1971).

*Vern.*: Woolly Xanthosia. *Distr.*: STWZ—also Tas., N.S.W., Qd.

#### ACTINOTUS Labill. (1805)

**A. bellidioides** (Hook. f.) Benth. *Flor. aust.* 3: 369 (1867).

*Hemiphues bellidioides* Hook. f. in Hook. *Lond. J. Bot.* 6: 470 bis (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 36, col. (1856), as *Hemiphues bellidioides*—4 varieties.

*Vern.*: Tiny Flannel-flower. *Distr.*: S (Baw Baws and very rare)—also Tas.

#### Tribe MULINEÆ

##### OSCHATZIA Walp. (1849)

**O. cuneifolia** (F. Muell.) Drude in *Natürl. PflFam.* III 8: 128 (1897).

*Pozoa cuneifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 103 (1855);

*Azorella cuneifolia* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 365 (1867).

*Illust.*: Fitch in Hooker's *J. Bot. & Kew Gdn Misc.* 7: t. 12 (1855), as *Centella cuneifolia* on plate, but *Microsciadium cuneifolium* in text (p. 379).

*Vern.*: Wedge Oschatzia. *Distr.*: SVW—also N.S.W.

##### DIPLASPIS Hook. f. (1847)

**D. hydrocotyle** Hook. f. in Hook. *Lond. J. Bot.* 6: 469 bis (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 34, col. (1856).

*Vern.*: Stiff Diplaspis. *Distr.*: RSV (alps)—also Tas., N.S.W.

##### SCHIZEILEMA Domin (1908)

**S. fragoseum** (F. Muell.) Domin in *Bot. Jb.* 40: 584 (1908).

*Pozoa fragosea* F. Muell. in *Trans. phil. Soc. Vict.* 1: 102 (1855).

*Vern.*: Alpine Pennywort. *Distr.*: SV (alps)—also N.S.W.

## Tribe SANICULÆ

## ERYNGIUM L. (1753)

1. Branches *prostrate*; radical leaves long-stalked, *oblanceolate*, the margins bearing *coarse spiny teeth*; flower-heads small, pale blue, *globular*, with  $\pm$  8-10 greenish pungent bracts 8-20 mm. long; fruit covered with rounded, blunt bladdery scales (marshy places generally, except in N.W., N.E. & E. regions):

*E. vesiculosum* Labill. *Nov. Holl. Plant. Specim. 1*: 73, t. 98 (1805).

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Prickfoot. *Distr.*: CDEJKNP—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Branches *erect*; radical leaves *deeply pinnatisect* (sometimes twice), with spreading spine-tipped segments

2. Flower-heads *ovoid-globular*, subtended by 10-20 relatively long, rigid, pungent bracts; bladdery scales on fruit cylindroid but  $\pm$  *acuminate* (widespread on heavier damp soils of open plains, especially in N., W. & N.W., the whole plant often with a metallic blue or purplish coloration):

*E. rostratum* Cav. *Icon. & Descr. Plant. 6*: 34, t. 552 (1801).

*Illust.*: Cavanilles (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 235, col.* (1968); Black, *Flor. S. Aust.* ed. 2: fig. 885 H-J (1952); Galbraith, *Wildflowers Vict.* ed. 3: t. 117 (1967); Davey, *J. Dep. Agric. Vict. 21*: 360 (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 276 (1970).

*Vern.*: Blue Devil. *Distr.*: CDEJKLMNPR—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Flower-heads  $\pm$  *oblong-cylindrical* (1.5-2.5 cm. long), with 5-12 relatively short subtending bracts; bladdery scales on fruit cylindroid and *obtuse to acutish* (apparently rare, scattered in Murray Valley & Mallee):

*E. plantagineum* F. Muell. in *Pap. roy. Soc. Tasm. 3*: 235 (1859).

*Vern.*: Long Eryngium. *Distr.*: BGM—also S.A., N.S.W., Qd.

[Victorian populations differ from the typical Queensland form (Peak Range area) in having cylindrical, *not* globular, white bladdery scales on the fruit, and in rather more divided foliage; they are most probably identical with *E. rostratum* var. *paludosum* Moore & Betche *Handb. Flor. N.S.W.* 220 (1893).]

## Tribe SCANDICEÆ

## \*SCANDIX L. (1753)

\**S. pecten-veneris* L. *Spec. Plant. 1*: 256 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 909 (1952); Ross-Craig, *Drawings Brit. Plants 12*: t. 34 (1958); Hegi, *Ill. Flor. Mittel-Eur. 5*<sup>a</sup>: t. 193 fig. 2 (1926); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg. 4*: fig. 1234, col. (1921); Abrams, *Ill. Flor. Pacific States 3*: fig. 3486 (1951); Coste, *Flor. Franc. 2*: fig. 1617 (1903).

*Vern.*: Shepherd's Needle. *Distr.*: N—also S.A., Tas., N.S.W., Qd, N.Z.

## \*TORILIS Adans. (1762-63)

\**T. nodosa* (L.) J. Gärtner. *Fruct. et Semin. Plant.* 1: 82, t. 20 (1788).*Tordylium nodosum* L. *Spec. Plant.* 1: 240 (1753).

*Illust.*: Gaertner (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 908 (1952); Ross-Craig, *Drawings Brit. Plants* 13: t. 27 (1959); Allan, *Bull. Dep. sci. industr. Res. N.Z.* 83: fig. 49 III (1940); Abrams, *Ill. Flor. Pacific States* 3: fig. 3483 (1951); Coste, *Flór. Franc.* 2: fig. 1480 (1903); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 2397 (1926); Reichenbach, *Icon. Flor. germ.* 21: t. 2008 fig. 1-9, col. (1866).

*Vern.*: Knotted Parsley. *Distr.*: ERTZ—also S.A., Tas., Qd, N.Z.

## Tribe SMYRNIEÆ

## OREOMYRRHIS Endl. (1839)

1. Plant with leafy umbellately branching stems; leaves densely villous to subglabrous, pinnate the leaflets then once or twice pinnatifid with acute linear to oblong segments; involucre bracts  $\pm$  8, narrow-oblong to oval, villous on both surfaces; fruits 5-10 (rarely to 15), oblong, black, 5-6 mm. long, on stout pedicels (1-5 mm. long) shorter than involucre (Cobberas alpine area, also Mt. Nelse and Mt. Skene):

*O. brevipes* Mathias & Constance in *Univ. Calif. Publ. Bot.* 27\*: 390, 388 fig. 14 d-f (1955).

*Illust.*: Mathias & Constance (*Genus Oreomyrrhis*—l.c.).

*Vern.*: Carraway. *Distr.*: SV—also N.S.W. (Kosciusko area).

—Plants acaulescent, not or hardly branching above the radical leaves; fruits on pedicels as long as or longer than involucre 2

2. Leaves appearing silvery from a dense covering of appressed shining silky hairs; bracts 6-8, lanceolate to ovate, densely silvery-hirsute on both surfaces; fruits 10-20, narrowly ovoid, coffee-brown, 4-5 mm. long, with thick corky ribs, on pedicels slightly exceeding involucre (rare alpine of Nunniong Plateau & Bogong High Plains):

*O. argentea* (Hook. f.) Hook. f. *Flor. Tasm.* 1: 162 (1856).

*Caldasia argentea* Hook. f. in Hook. *Icon. Plant.* 3: t. 300 (1840).

*Illust.*: Hooker f. (l.c.); Mathias & Constance, *Genus Oreomyrrhis*, *Univ. Calif. Publ. Bot.* 27\*: 384 fig. 12 a-d (1955).

*Vern.*: Silver Carraway. *Distr.*: VW—also Tas., N.S.W. (Kosciusko area), A.C.T.

—Leaves and bracts glabrous to hirsute but not silvery 3

3. Surfaces of leaves and bracts variably hirsute; leaves to 8" long, the ultimate divisions obovate-oblong; fruits 15-25, on pedicels far exceeding the involucre (widespread through eastern highlands, but very uncommon and scattered in W. Victoria):

*O. eriopoda* (DC.) Hook. f. *Flor. Tasm.* 1: 162 (1856).

*Caldasia eriopoda* DC. *Coll. dix Mém.* 5: 60, t. 2 (1829);

*O. andicola* sens. Ewart *Flor. Vict.* 903 (1931) atque auctt. plur., non (Kunth) Hook. f. (1844-47).

*Illust.*: Mathias & Constance, *Genus Oreomyrrhis*, Univ. Calif. Publ. Bot. 27\*: 384 fig. 12 e-g (1955); Black, *Flor. S. Aust.* ed. 2: fig. 902 (1952), as *O. andicola*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 274 (1970).

*Vern.*: Australian Carraway. *Distr.*: EJNSVWZ—also S.A., Tas., N.S.W., A.C.T.

—Surfaces of leaves and bracts *glabrous*; leaves normally <4" long, the ultimate divisions *linear*,  $\pm$  *mucronate* and often with ciliate margins; fruits <15

4. Leaves *linear-oblong* in outline; petals *white*,  $\pm$  *pubescent* on backs; style and its base minute (<0.5 mm. long), pedicels to 15 mm. long, *manifestly longer* than involucre (damp places in alps between Macalister R. sources & Upper Murray R.):

*O. ciliata* Hook. f. in Hook. *Lond. J. Bot.* 6: 471 bis (1847).

*Illust.*: Mathias & Constance, *Genus Oreomyrrhis*, Univ. Calif. Publ. Bot. 27\*: 394 fig. 16 d-e (1955).

*Vern.*: Carraway. *Distr.*: SVW—also Tas., N.S.W., A.C.T.

—Leaves *oblong-oval* in outline; petals *yellow*, *glabrous*; style and its base up to 1 mm. long; pedicels 2-7 mm. long,  $\pm$  equal to or slightly exceeding involucre (matted, often cushion-like plant on damp ground of higher alps):

*O. pulvinifica* F. Muell. *Fragm. Phyt. Aust.* 8: 185 (1874).

*Illust.*: Mathias & Constance, *Genus Oreomyrrhis*, Univ. Calif. Publ. Bot. 27\*: 394 fig. 16 a-c (1955).

*Vern.*: Cushion Carraway. *Distr.*: SVW—also N.S.W. (Kosciusko area).

[A very conservative attitude to speciation within the genus is taken by C. G. G. J. van Steenis who remarks, in *Flora Malesiana* 5\*: 55 (1958), "The microspecies (i.e. of Mathias & Constance, 1955) are in my opinion of racial rank."]

### \*CONIUM L. (1753)

\**C. maculatum* L. *Spec. Plant.* 1: 243 (1753).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 150 (1958); Black, *Flor. S. Aust.* ed. 2: fig. 910 (1952); Ross-Craig, *Drawings Brit. Plants* 12: t. 6 (1958); Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 50 (1940); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 194 fig. 4 (1926); Abrams, *Ill. Flor. Pacific States* 3: fig. 3501 (1951); Coste, *Flor. Franc.* 2: fig. 1639 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 279 (1970).

*Vern.*: Hemlock. *Distr.*: CEJKNPRSTVW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

## Tribe AMMINEÆ

### \*AMMI L. (1753)

\**A. majus* L. *Spec. Plant.* 1: 243 (1753).

*Illust.*: *Ill. Flor. Mittel-Eur.* 5\*: fig. 2443 (1926); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1222, col. (1921); Reichenbach, *Icon. Flor. germ.*

21: t. 1864, col. (1863); Abrams, *Ill. Flor. Pacific States* 3: fig. 3500 (1951); Coste, *Flor. Franc.* 2: fig. 1600 (1903).  
*Vern.*: Bishop's Weed. *Distr.*: LST—also N.S.W., Qd.

\*PETROSELINUM Hill. (1756)

\**P. crispum* (Mill.) Nyman ex A. W. Hill in *Hand-list herb. Plants Roy. Bot. Gdns*, Kew ed. 3: 122 (1925).

*Apium crispum* Mill. *Gdnrs Dict.* ed. 8: n. 2 (1768);

*Carum petroselinum* Benth. & Hook. f. *Gen. Plant.* 1: 891 (1867).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 12: t. 20 (1958); Abrams, *Ill. Flor. Pacific States* 3: fig. 3498 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 196 fig. 2, also 5<sup>2</sup>: fig. 2433-2437 (1926), as *P. hortense*; Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1231, col. (1921), as *P. sativum*.

*Vern.*: Parsley. *Distr.*: Sporadic—also S.A., Tas., N.Z.

[The history of this name and its correct author-citation are discussed by H. K. Airy-Shaw in *Kew Bulletin* 1939: 168 (1939).]

APIUM L. (1753)

1. Segments of the bipinnatisect leaves very narrow, *almost filiform*, usually <0.5 mm. wide (slender annual of stream-sides):

*A. leptophyllum* (Pers.) F. Muell. ex Benth. *Flor. aust.* 3: 372 (1867), non certe *A. tenuifolium* (Moench 1794) Thell. 1926.

*Pimpinella leptophylla* Pers. *Synops. Plant.* 1: 324 (1805);

*A. ammi* (N. J. Jacq., ut *Sison ammi*—nom. illeg.) Urban in Mart. *Flor. brasil.* 11<sup>1</sup>: 341 (1879).

*Illust.*: Bailey, *Weeds & susp. poison. Plants* Qd fig. 112 (1906); Fawcett & Rendle, *Flor. Jamaica* 5: 428 (1926); Burbidge, *Flor. Aust. Cap. Terr.* fig. 283 (1970).

*Vern.*: Slender Celery. *Distr.*: NPRWZ—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust., N.Z., Amer.

—Segments of leaves *linear-lanceolate to deltoid or rhomboid* 2

2. Leaves twice pinnatisect, the segments very variable (linear-lanceolate to obovate); umbels *leaf-opposed*; fruit-surface *almost covered* by the thick corky ribs (ascending, often slender *perennial* of saline coastal tracts, more rarely along inland waterways):

*A. prostratum* Vent. *Jard. Malm.* 2: t. 81 (1805).

*A. australe* Pet. Thouars *Esquisse Flor. Tristan d'Acugna* 43 (1811).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 914 & 885 M-N (1952), as *A. australe*; Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 12, col. (1967), as *A. australe*; Labillardière, *Nov. Holl. Plant. Specim.* 1: t. 103 (1805).

*Vern.*: Sea Celery. *Distr.*: CDEJKPTWZ—also S.A., Tas., N.S.W., N.Z., S. Amer.

—Leaves *simply pinnate*, the  $\pm$  deltoid segments (to 3 cm. long) lobed and crenato-serrate; umbels *terminal and axillary*; fruit with *broad furrows*

between the slender ribs (robust, erect, aromatic *biennial* escape from cultivation):

\**A. graveolens* L. *Spec. Plant.* 1: 264 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 12: t. 13 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 2426-28 & 2434 g-i (1926); Bostelmann in Boswell, *Natn. geogr. Mag.* 96: 184, col. (Aug. 1949); Reichenbach, *Icon. Flor. germ.* 21: t. 1854 fig. II, col. (1867); Coste, *Flor. Franc.* 2: fig. 1615 (1903); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1232, col. (1921).

*Vern.*: Celery. *Distr.*: EN (sporadic)—also S.A., N.S.W., N.Z.

### SIUM L. (1753)

*S. latifolium* L. *Spec. Plant.* 1: 251 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 912 (1952)—var. *univittatum*. [See Ross-Craig, *Drawings Brit. Plants* 12: t. 25 (1958), for typical *S. latifolium*.]

*Vern.*: Water Parsnip. *Distr.*: DEJKNSTWZ—also S.A., N.S.W., Qd.

[Australian populations are referable to the var. *univittatum* J. M. Black *Flor. S. Aust.* 443 (1926), distinguishable from the typical, European form in having only a *single oil-canal* (not 3 or more) in each furrow of the fruit.]

### SESELI L. (1753)

*S. harveyanum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 104 (1855).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 285 (1970).

*Vern.*: Slender Seseli. *Distr.*: VWZ—also N.S.W., A.C.T.

### LILÆOPSIS Greene (1891)

*L. polyantha* (Gandoger) Hj. Eichler in *Taxon* 12: 296 (1963).

*Crantzia polyantha* Gandoger in *Bull. Soc. bot. France* 65: 31 (1918);

*L. australica* A. W. Hill ex J. M. Black *Flor. S. Aust.* 440 (1926).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 885 o-p & 901 (1952); Hill, *J. Linn. Soc. Bot.* 47: 547 (1927)—both as *L. australica*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 275 (1970).

*Vern.*: Australian Lilæopsis. *Distr.*: CDEJNPRWX—also S.A., N.S.W., A.C.T.

### \*FÆNICULUM Mill. (1754)

\**F. vulgare* Mill. *Gdnrs Dict.* ed. 8 n. 1 (1768).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 916 (1952); Hutchinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 53 III (1940); Ross-Craig, *Drawings Brit. Plants* 13: t. 2 (1959); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 200 fig. 1, col. (1926), also 5\*: fig. 2484-86 (1926); Abrams, *Ill. Flor. Pacific States* 3: fig. 3528 (1951); Coste, *Flor. Franc.* 2: fig. 1561 (1903), as *F. officinale*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 281 (1970); Everard, *Wild Flowers World* t. 17 fig. C, col. (1970).

*Vern.*: Fennel. *Distr.*: AFJKNPRW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.



## ACIPHYLLA Forst. &amp; Forst. f. (1776)

Leaves fan-like, *once or twice pinnate* with rigid, acuminate, linear segments 2-3 cm. long, the ample sheaths 1-2 cm. wide; male inflorescence *stout*, with 10 or more crowded umbellules on each branch of primary umbel:

**A. glacialis** (F. Muell.) Benth. *Flor. aust.* 3: 375 (1867).

*Gingidium glaciale* F. Muell. in *Trans. phil. Soc. Vict.* 1: 103 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 532 & 535, col. (1968); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 9, col. (1962); Mass, *Flowers aust. Alps* [25] (1967).

*Vern.*: Snow Aciphyll. *Distr.*: RSV—also N.S.W.

Leaves *undivided*, narrowly oblanceolate to linear, blunt at apex, prominently septate, 2-12" long, the sheaths <1 cm. wide; male inflorescence *slender*, the umbellules usually 5-10 and standing well apart:

**A. simplicifolia** (F. Muell.) Benth. *Flor. aust.* 3: 375 (1867).

*Gingidium simplicifolium* F. Muell. in *Trans. phil. Soc. Vict.* 1: 104 (1855).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 63 (1886); Mueller, *Plants indig. Colon. Vict.* t. 27 (1864-65), as *Gingidium simplicifolium*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 284 (1970).

*Vern.*: Mountain Aciphyll. *Distr.*: RSVWZ—also N.S.W., A.C.T.

## Tribe PEUCEDANEÆ

## \*PASTINACA L. (1753)

**\*P. sativa** L. *Spec. Plant.* 1: 262 (1753).

*\*Peucedanum sativum* (L.) S. Watson in *Cat. Plant. coll. 1871, 1872 & 1873* (Engineer Dep., U.S. Army—Geogr. geol. Explor. & Surveys): 9 (1874).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 917 (1952); Ross-Craig, *Drawings Brit. Plants* 13: t. 21 (1959); M. E. R. in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 76 c (1940); Abrams, *Ill. Flor. Pacific States* 3: fig. 3539 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 203 fig. 2 (1926); Burbidge, *Flor. Aust. Cap. Terr.* fig. 280 (1970).

*Vern.*: Parsnip. *Distr.*: NS (sporadic)—also S.A., Tas., A.C.T., N.Z.

## Tribe DAUCEÆ

## DAUCUS L. (1753)

Secondary umbels of a *few* (2-6) unequal rays, the outer bracts <5 mm. long; fruits 4-5 mm. long, their spines manifestly *barbed at the apex* and sometimes lower (slender widespread *annual*, normally <8" high):

*D. glochidiatus* (Labill.) Fisch. et al. *Index Sem. Hort. Petrop.* 9 suppl. 11 (1844).

*Scandix glochidiata* Labill. *Nov. Holl. Plant. Specim.* 1: 75, t. 102 (1805).

*Illust.*: Labillardière (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 101, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 906 (1952); Myers in Turner, *Forage Plants Aust.* t. opp. 37 (1891), as *D. brachiatus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 278 (1970).

*Vern.*: Austral Carrot. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

Secondary umbels large with numerous ( $>15$ )  $\pm$  equal rays, the outer bracts 10 mm. long or more; fruits 3-4 mm. long, their spines *not barbed* (tall biennial weed, 1-4 ft.):

\**D. carota* L. *Spec. Plant.* 1: 242 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 907 (1952); Muenscher, *Weeds* 354 (1947); Bostelmann in Boswell, *Natn. geogr. Mag.* 96: 201, col. (Aug. 1949); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>1</sup>: t. 204 fig. 2, col. (1926), also 5<sup>1</sup>: fig. 2576-2584 a (1926)—incl. subspp. & var.; Abrams, *Ill. Flor. Pacific States* 3: fig. 3494 (1951); Coste, *Flor. Franc.* 2: fig. 1473 (1903).

*Vern.*: Carrot. *Distr.*: EHMNST—also S.A., Tas., N.S.W., N.Z.

[In his *Flor. Vict.* 905 & 909 (1931) Ewart records both the Mediterranean *Bupleurum rotundifolium* L. (Hare's-ear or Modesty) and Eurasian *Crithmum maritimum* L. (Rock or Common Samphire) as "widely spread in Victoria". The former, a small annual with orbicular perfoliate leaves, is represented in the Melbourne Herbarium only by an old collection from the Lower Loddon R. (1882) while the latter, a perennial with much dissected fleshy foliage, is not represented at all. Since neither species has been observed in the State for several decades past, they are deleted from the present handbook. Several other members of *Umbelliferae* have been noted once or twice as adventive, but do not seem to have persisted here, viz.: *Capnophyllum africanum* J. Gært. (Coode Id, 1912); *Pimpinella anisum* (Lakes Entrance, 1936); *Oenanthe pimpinelloides* L. (Glen Alvie north of Wonthaggi, 1956); *Anthriscus caucalis* Bieb. (Mt. Beckworth near Clunes, 1963). The tall biennial *Smyrniololus atrum* L. (Alexanders) and robust yellow-flowered perennial *Ferula nodiflora* L. have appeared occasionally in old suburban gardens, the latter being recorded as naturalized in South Australia. Considering the very rich representation of umbelliferous genera in western Europe, it is surprising that so few species have become established in S.E. Australia.]

### Family ERICACEÆ

1. Leaves  $<\frac{1}{2}$ " long, narrow-linear to terete with revolute margins, densely arranged; flowers axillary forming leafy panicles; corolla persistent, shrivelling around the minute capsular fruit (garden escapes)

\**Erica* (p. 494)

Leaves serrate, 1" long or more, lanceolate to broad-elliptic; flowers in terminal racemes or panicles; corolla deciduous

2. Fruit a fully exposed, densely warted, orange-red *globular berry* to 1" wide; leaves elliptic, 2-4" long (small tree and escape from gardens)

\**Arbutus* (p. 494)

Fruit a *capsule* enclosed by the white or pinkish *accrescent fleshy calyx*; leaves lanceolate to oblong, 1-2" long, finely reticulate (montane to subalpine shrub of E. highlands)

*Gaultheria* (p. 494)

[For note on recent restoration of genus *Wittsteinia* to this family, see under *Epacridaceae* (p. 497).]

### GAULTHERIA L. (1753)

**G. appressa** A. W. Hill in *J. Linn. Soc. (Bot.)* 49: 622 (1935).

*G. hispida* sens. Ewart *Flor. Vict.* 912 (1931), *non* R. Br. (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 392, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 122 (1967); Nicholls, *Wild Life (Melb.)* 3: 281 (1941); Stewart, *Vict. Nat.* 59: t. 4 opp. 30 (1942).

*Vern.*: Wax-berry *Distr.*: RSVWZ—also N.S.W.

### \*ARBUTUS L. (1753)

\***A. unedo** L. *Spec. Plant. 1*: 395 (1753).

*Illust.*: Hay & Syngé, *Dict. gdn Plants* t. 1450, col. (1969); Ross-Craig, *Drawings Brit. Plants* 19: t. 17 (1963); Meikle, *Brit. Trees & Shrubs* (Kew ser.) fig. 39 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>o</sup>: fig. 2675-76 (1926); Perrin, *Brit. flowering Plants* 3: t. 202, col. (1914); Coste, *Flor. Franc.* 2: fig. 2375 (1903); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1809, col. (1924).

*Vern.*: Strawberry Tree (*Arbutus*). *Distr.*: J (Creswick).

### \*ERICA L. (1753)

Leaves 4-6 mm. long, plano-convex in section, *hairy* on under-sides; flowers *globular, rose-pink*, the sepals *petaloid* and *as long as* corolla-tube (4-5 mm.); stigma capitate, level with tips of petals (spreading *glabrous* shrub around Mt. Martha on Mornington Penins.):

\***E. baccans** L. *Mant. Plant.* 2: 233 (1767).

*Illust.*: Curtis's *bot. Mag.* 10: t. 358, col. (1797); Marloth, *Flor. S. Afr.* 3<sup>1</sup>: t. 3 fig. D, col. (1932)—as fig. "E" in caption; Drude in Engler, *Natürl. PflFam.* IV 1: fig. 35 t (1889)—flower.

*Vern.*: Berry-flower Heath. *Distr.*: P.

Leaves 5-7 mm. long, almost terete, *glabrous*; flowers  $\pm$  *cylindrical, white* (the buds often tinged pink), the very small sepals ( $\pm$  1 mm.) much *shorter than* corolla-tube; stigma cup-shaped, becoming *exserted* in older flowers (stiffly erect shrub to 10 ft. high, the branchlets beset with *short simple hairs*—conspicuous in and around Dandenong Ranges):

\**E. lusitanica* Rudolph in Schrad. *J. Bot. Göttingen* 2: 286 (1799).

*Illust.*: Fitch in *Curtis's bot. Mag.* 131: t. 8018, col. (1905); Coste, *Flor. Franc.* 2: fig. 2395 (1903); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1816 b; col. (1924).

*Vern.*: Spanish Heath. *Distr.*: JNP—also S.A., Tas., N.S.W., N.Z.

[Ewart, *Flor. Vict.* 913 (1931) also admits the Tree Heath, *E. arborea* L. *Spec. Plant.* 1: 353 (1753) of Mediterranean regions, as naturalized, making its Victorian distribution co-extensive with that of *E. lusitanica*. It would appear that this extraordinary coincidence was the result of misidentifications, and the only Victorian sample of genuine *E. arborea* at Melbourne Herbarium is a fragment collected in the Research district, Apr. 1911—perhaps from an old garden or plantation. *E. arborea* is recorded as naturalized in S.E. Tasmania, and it may be distinguished from *E. lusitanica* as follows: hairs on the branchlets *barbellate*, pedicel *longer* than corolla the lobes of which are about *as long as* the tube (much shorter than tube in *E. lusitanica*).]

### Family EPACRIDACEÆ

1. Leaves elliptic, thickish, glabrous, coarsely and *distantly toothed*, 1 cm. wide or more; flowers greenish-yellow, the tube 5-8 mm. diam.; ovary *inferior*; fruit a globular *greenish white berry* crowned by the persistent calyx (creeping or sprawling semi-shrub of subalpine slopes and gully-heads, from Mt. Donna Buang to Lake Mtn. & Baw Baws, also King R. valley—endemic in Victoria) *Wittsteinia* (p. 497)  
Leaves appearing *entire* (but sometimes minutely serrulate), much <1 cm. wide (except in the long-leaved *Richea continentis*); flower-tube mostly <5 mm. diam.; ovary *superior* 2
2. Style quite *terminal*; ovules *solitary* in each loculus; fruit a  $\pm$  *succulent drupe* 5  
Style *inserted in a deep depression* between the carpels; ovules *several* per loculus; fruit a *capsule* opening by 5 valves 3
3. Leaves *articulate* at the base, usually very shortly stalked; corolla-tube persisting until after anthesis, *at least as long as* the lobes; staminal filaments variously *fixed to the corolla* *Epacris* (p. 498)  
Leaves with broad *stem-sheathing bases*; staminal filaments free to their bases 4
4. Flowers *pale pink*, terminating short crowded lateral branches, the inflorescence forming an ovoid head; corolla *persistent*, with *very short tube*; anthers densely *hairy*; leaves much <1" long, falling at last *without any residual scars* on the stem (widespread on damp heaths) *Sprengelia* (p. 497)  
Flowers *creamy white*, in narrow *leafless spicate panicles*; corolla falling away unopened at anthesis *as an operculum* or hood; anthers *glabrous*; leaves 1-3" long (mossy alpine bogs) *Richea* (p. 497)
5. Stamens *attached below the ovary*; anthers *2-locular*; flowers 1-3 at ends of branches; corolla whitish,  $\pm$  3 mm. long, slightly hairy inside (extremely rare virgate shrublet  $\pm$  6" high, confined to Brisbane Ranges where endemic) *Choristemon* (p. 502)  
Stamens *fixed to corolla-tube*; anthers *1-locular* 6

6. Anthers *manifestly exerted* beyond corolla-tube, the narrow corolla-lobes densely hairy inside and *strongly revolute* at anthesis (low, sometimes matted shrubs of far W. Victoria, Grampians region, and Stratford-Bairnsdale heathland areas) *Styphelia* (p. 500)  
     Anthers *not protruding* beyond throat of corolla 7
7. Corolla *bright red, yellow or greenish*, the tube 1 cm. long or more (shrubs often matted) *Astroloma* (p. 501)  
     Corolla *white* or, if  $\pm$  coloured, then the tube much  $<1$  cm. long 8
8. Corolla-lobes  $\pm$  *imbricate* (overlapping) in the bud, the tube with tufts of *descending hairs* inside *Brachyloma* (p. 511)  
     Corolla-lobes *valvate* (not overlapping) in the bud 9
9. Flowers *greenish*, in clusters (often dense) *on the older branches*; corolla-lobes widely spreading and *bearded only at the tips* with stiff reflexed hairs, the tube *swollen* and full of nectar *Acrotriche* (p. 510)  
     Flowers *not green*, their bearding (if any) *not* confined to the tips of lobes 10
10. Drupe with a *single stone* (sometimes several-seeded) 12  
     Drupe *crimson or purplish*, with 5-10 *separable nutlets* or pyrenes; corollas hairy inside (low or matted plants of alps and subalps) 11
11. Flowers *solitary* and sessile; fruit *crimson*, with normally 5 pyrenes; leaves *slightly concave*, 3-5 mm. long (prostrate mat-plant of open ground in higher alps; corolla bearded) *Pentachondra* (p. 512)  
     Flowers *several* in short spikes; fruit *bluish-purple*, with normally 10 pyrenes; leaves flat, 6 mm. long or more (scrambling or ascending semi-shrub of shaded places in cent. subalps) *Trochocarpa* (p. 512)
12. Ovary and drupe *unilocular*, 1-seeded; corollas *minute* ( $\pm 2$  mm. long), quite glabrous, the lobes  $\pm$  thickened at tips *Monotoca* (p. 509)  
     Ovary 2- to 5-locular, the corolla often hairy inside 13
13. Subtending bract and 2 bracteoles inserted *at some distance* below base of calyx; corolla usually pinkish, with hairy throat but glabrous lobes; drupe white or pink; leaves pungent *Lissanthe* (p. 509)  
     Subtending bract and bracteoles inserted *immediately below* the calyx 14
14. Floral bract 1 (rarely 0); bracteoles 2, *strictly opposite*; corolla-lobes usually *densely bearded* inside [glabrous in the high-alpine *L. montanus*] *Leucopogon* (p. 502)  
     Floral bract 1; bracteoles 3 or more, *imbricate* 15
15. Sepals 5-6 mm. long, *obtus*e, often coloured; corolla-tube *broad*, *shorter than calyx*, with 5 glandular scales inside; drupe hardly fleshy (small shrubs of drier, often gravelly inland hills) *Melichrus* (p. 502)  
     Sepals  $\pm 2$  mm. long, *pointed*; corolla-tube slightly *longer than calyx*, either glabrous or sparsely hairy inside, but *without scales*; fruit *fleshy*, crimson to pink, very showy (rare bushes, to 6 ft. high, on rocky granitic sea-cliffs around Wilson Promontory and at Cape Woolamai) *Cyathodes* (p. 508)

[F. Mueller, *Fragm. Phyt. Aust.* 6: 50-57 (1867), assigned most species of the tribe *Stypheliæ* to a single genus, *Styphelia* (*sens. lat.*). Although systematists had been almost universally following Bentham's treatment in *Flor. aust.* 4 (1868)

all this century, H. Sleumer in *Blumea* 12: 146-169 (1963) gave reasons for a return to Mueller's more conservative outlook. Sleumer thus reduced the genera *Lissanthe*, *Leucopogon* and *Cyathodes* to three subgenera of *Styphelia*, merging *Melichrus* and *Astroloma* with *Styphelia* (*sens. strict.*) in the subgenus *Styphelia*. Whatever the merits of such a re-classification, most Australian botanists prefer to maintain these six taxa as separate genera, in conformity with Ewart's *Flor. Vict.* (1931), Black's *Flor. S. Aust.* ed. 2 (1952), Curtis's *Student's Flor. Tasm.* (1963) etc. The latter circumscription has been adopted here, but anyone desiring to follow Sleumer will find binomials already validly published under *Styphelia* for all the Victorian species concerned. In his recent, posthumous, *Flor. N.Z.* 1: 515-517 (1961), H. H. Allan merged the four New Zealand species of *Leucopogon* under *Cyathodes*.]

### WITTSTEINIA F. Muell. (1861)

*W. vacciniacea* F. Muell. *Fragm. Phyt. Aust.* 2: 136 (1861).

*Illust.*: Jackes, *Aust. Plants* 4<sup>th</sup>: 157 (1967); Pescott, *Vict. Nat.* 42: t. 8 opp. 292 (1926); Mueller, *Key Syst. Vict. Plants* 2: fig. 109 (1886); Mueller, *Plants indig. Colon. Vict.* 1: t. 51 (1864-65).

*Vern.*: Baw-Baw Berry. *Distr.*: S (Mt. Donna Buang, Lake Mtn., Baw Baws, King R. valley near Mt. Cobbler).

[This remarkable and very localized plant—constituting one of the two genera endemic in Victoria—is unique among Epacridaceæ by virtue of the *inferior ovary*. Regarded by its author, and succeeding workers (including Ewart, 1931) as an aberrant member of Ericaceæ, *Wittsteinia* is currently referred to *Epacridaceæ* with which it shares such features as staminal number (5), anther dehiscence (by longitudinal slits) and a 2- to 3-celled ovary—usually 4- to 5-celled in Ericaceæ.

In *Bot. J. Linn. Soc.* 64<sup>th</sup>: 45 (Jan. 1971), P. F. Stevens has restored *Wittsteinia* to the *Ericaceæ*, establishing for it a new subfamily *Wittsteinioidæ*. His reasons are that "*Wittsteinia* lacks all the anatomical characters of the *Epacridaceæ*: the elongated, lignified epidermal cells and the prominent bundles of fibres associated with the midrib bundle . . . has multicellular hairs, and all its anatomical characters . . . are much commoner in the *Ericaceæ* than in the *Epacridaceæ*".]

### SPRENGELIA Sm. (1794)

*S. incarnata* Sm. *Tracts nat. Hist.* 272, t. 2 (1798).

*Illust.*: Smith (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 941 (1952); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 110, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 127 (1967); Leithhead, *Wild Life (Melb.)* 4: 97 (1942); Jackes, *Aust. Plants* 4<sup>th</sup>: 248, col. 251 (1968); Curtis's *bot. Mag.* 41: t. 1719, col. (1815); Garnet, *Wildflowers Wilson's Prom. t.*, n. 677 opp. 78 (1971).

*Vern.*: Pink Swamp-heath. *Distr.*: CDEJKNPSTZ—also S.A., Tas., N.S.W.

### RICHEA R. Br. (1810)

*R. continentis* B. L. Burt in Curtis's *bot. Mag.* 163: sub. t. 9632 (1941).

*R. gunnii* *sens. Ewart Flor. Vict.* 919 (1931), *non strict.* Hook. f. (1847).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 512, col. (1968); Wakefield, *Vict. Nat.* 77: 9 (1960); Nicholls, *Wild Life (Melb.)* 3: 277 (1941), also 6: 246 (1944), both as *R. gunnii*; Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 60, col. (1964), also in *Aust. Plants* 5 n. 39: 100, col. (1969); Mass, *Flowers aust. Alps* 27 (1967); Burbidge, *Flor. Aust. Cap. Terr.* fig. 297 (1970).

*Vern.*: Candle Heath (Swamp Heath). *Distr.*: RSVW—also N.S.W., A.C.T.

### EPACRIS Cav. (1797)

1. Corolla-tube *several times as long* as calyx, with 5 regular indentations near base; flowers white, pink or red, often  $\pm$  secund along the stems; leaves lanceolate, pungent, up to 15 mm. long (very widespread—the *State Floral Emblem of Victoria*):

*E. impressa* Labill. *Nov. Holl. Plant. Specim.* 1: 43, t. 58 (1805).

*Illust.*: Labillardière (*l.c.*); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 8 & 9, col. (1968); Rosser, *Wildflowers Vict.* 7, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 919 A-B (1952); Ewart, *Flor. Vict.* fig. 314 (1931); Brooks, *Aust. native Plants* t. inter 64 & 65 (1959); Ashby in *Aust. Plants* 6<sup>41</sup>: 97, col. (1971); Garnet, *Wildflowers Wilson's Prom. t.*, col. n. 665 opp. 30 (1971); Morcombe, *Aust. Wildflowers* t. on [17], col. (1970).

*Vern.*: Common Heath. *Distr.*: CDEJKMNPRSTVWZ—also S.A., Tas., N.S.W.

[It is impracticable in this very polymorphic species to recognize infra-specific taxa based on flower-colour or leaf-shape, but the var. *grandiflora* Benth. *Flor. aust.* 4: 235 (1868) of rocky places in the Grampians does seem to be distinctive in its broader, *coarser downy foliage* and larger (5 mm. wide or more) rosy-crimson corollas. This taxon had previously been described as a distinct species, *E. tomentosa* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 177 (1838).]

—Corolla-tube *not* or hardly exceeding the calyx, *without* basal indentations, white or cream-coloured 2

2. Flowers usually *secund* along stems, the pedicels  $\pm$  reflexed; corolla-tube  $\pm$  6 mm. long, *slightly exceeding* the calyx; leaves erect, 6-12 mm. long, oblong-elliptical, quite *obtus* (damp heaths in southern districts):

*E. obtusifolia* Sm. *Exot. Bot.* 1: 77, t. 40 (1806).

*Illust.*: Smith (*l.c.*); Scarth-Johnson, *Wildflowers Warm East Coast* 81, col. (1967); Jackes, *Aust. Plants* 3<sup>11</sup>: 202 (1965), as *E. obtusiflora*; Fitch in *Curtis's bot. Mag.* 66: t. 3775, col. (1840); Sulman, *Aust. Wild Flowers* ser. 2: t. 59 (1913); Sulman, *Some Familiar Wild Flowers* t. 10 [1913]; Everard, *Wild Flowers World* t. 136 fig. B, col. (1970).

*Vern.*: Blunt-leaf Heath. *Distr.*: DENPTXZ—also S.A., Tas., N.S.W., Qd.

—Flowers terminal and axillary, *not secund* along stems; leaves acute or <4 mm. long 3

3. Leaves 3-6 mm. long and broad, acuminate, pungent, with *cordate stem-clasping bases*, erect-at the short petiole, then spreading widely or even recurved; flowers extending along upper part of slender branches in *leafy spike-like inflorescences*, campanulate, short ( $\pm$  4 mm.), with

very short styles (wet heaths and peaty stream-banks from sea-level to subalps):

*E. microphylla* R. Br. *Prodr. Flor. Nov. Holl.* 550 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 10, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 125 (1967); Fitch in Hooker, *Flor. Tasm.* 2: t. 78, col. (1857) [These are all of var. *gunnii*, though the first two have the caption *E. microphylla* and the last *E. gunnii*]; Everard, *Wild Flowers World* t. 136 fig. E, col. (1970).

*Vern.*: Coral Heath. *Distr.*: KNRSTVWZ—also Tas., N.S.W., A.C.T., Qd, N.Z.

[Victorian and Tasmanian populations are referable to the var. *gunnii* (Hook. f., *ut sp.*) Benth. *Flor. aust.* 4: 240 (1868), with larger, longer-pointed leaves than in the typical form from Port Jackson.]

- Leaves *not* cordate and stem-clasping, usually much longer than wide; flowers *clustered towards end* of the branch 4
- 4. Leaves <5 mm. long, ovate; corolla campanulate; style <2 mm. long (higher alpine areas) 7
- Leaves >5 mm. long, narrow-ovate to lanceolate, acuminate; style often >3 mm. long 5
- 5. Style  $\pm$  *hairy* along central bulbous portion; sepals and bracts acuminate, 3-5 mm. long, their apices usually *spreading* and margins  $\pm$  *woolly-ciliate*; leaves *narrow-lanceolate, strongly keeled* towards the apex, 7-11 mm. long (wet lowland heaths):

*E. lanuginosa* Labill. *Nov. Holl. Plant. Specim.* 1: 42, t. 57 (1805).

*Illust.*: Labillardière (*l.c.*); Rosser, *Wildflowers Vict.* 91, col. (1968); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 88, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 126 (1967); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 38, col. (1963); Jackes, *Aust. Plants* 3<sup>25</sup>: 211 (1965); Ashby in *Aust. Plants* 6<sup>47</sup>: 96, col. (1971); Garnet, *Wildflowers Wilson's Prom.* fig. 666 (1971).

*Vern.*: Woolly-style Heath. *Distr.*: DEJKSTZ—also Tas., N.S.W.

- Style *glabrous*; sepals acute or obtuse, *glabrous*; bracts acute, usually *appressed*; leaves *lanceolate to ovate* (wet places, chiefly. alps and subalps) 6
- 6. Leaves broad-lanceolate,  $\pm$  3 mm. wide; corolla-tube  $\pm$  4 mm. long; style 4-5 mm. long,  $\pm$  bulbous towards middle (bush 3-6 ft. high):

*E. paludosa* R. Br. *Prodr. Flor. Nov. Holl.* 551 (1810).

*E. bawbawiensis* Stapf in *Kew Bull.* 1910: 217, t. opp. 213 fig. 12-16 (1910).

*Illust.*: Stapf (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 422, col. (1968); Jackes, *Aust. Plants* 3<sup>25</sup>: 211 (1965); Mass, *Flowers aust. Alps* 47 (1967); Pescott, *Vict. Nat.* 42: t. 8 opp. 292 (1926), as *E. bawbawiensis*.

*Vern.*: Swamp or Alpine Heath. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

- Leaves elliptic-ovate, 3-5 mm. wide; corolla-tube  $\pm$  2 mm. long; style extremely short (<1 mm. long):



*E. breviflora* Stapf in *Kew Bull.* 1910: 216, t. opp. 213 fig. 6-11 (1910).

*Illust.*: Stapf (*l.c.*); Burbidge, *Flor. Aust. Cap. Terr.* fig. 296 (1970).

*Vern.*: Drumstick Heath. *Distr.*: NRSVWZ—also N.S.W., A.C.T.

[It is possible that *E. breviflora* is of hybrid origin, with the following species (*E. petrophila*) in its ancestry.]

7. Sepals 3-4 mm. long; style extremely short ( $\pm$  0.2 mm.), usually about same length as stigma; leaves 2-4 mm. long (rarely more), acute or obtuse, prominently *keeled* along the midvein:

*E. petrophila* Hook. f. *Flor. Tasm.* 1: 261 (1857).

*Vern.*: Snow Heath. *Distr.*: RSVW—also Tas., N.S.W., A.C.T.

—Sepals  $\pm$  2 mm. long; style as long as ovary ( $\pm$  1 mm.), slender,  $\pm$  bulbous near middle; leaves 2-3 mm. long, obtuse, *hardly keeled*:

*E. serpyllifolia* R. Br. *Prodr. Flor. Nov. Holl.* 551 (1810).

*Illust.*: Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 6, col. (1962); Jackes, *Aust. Plants* 3<sup>rd</sup>: 214 (1965); Baglin, *ibid.* 3<sup>rd</sup>: 152 (1965).

*Vern.*: Thyme Heath. *Distr.*: RSV—also Tas., N.S.W.

[Ewart, *Flor. Vict.* 916 (1931) admits *E. longiflora* Cav. (*Fuchsia* Heath), as "E. Victoria, and rare". There are no examples from the State in Melbourne Herbarium, nor has the species been noted as spontaneous outside N.S.W. by anyone this century, the record being now considered erroneous. This striking plant has cordate leaves on long wiry branches that bear combs of long (to 1'), pendulous, crimson flowers with white lobes.]

### STYPHELIA Soland. ex Sm. (1793-95)

Leaves *lanceolate*, pungent, *scabrid-ciliate*, to  $\pm$  25 mm. long; sepals oblong, *obtuse*,  $\pm$  8 mm. long; corolla *yellow*, with greenish tip, the tube 12-15 mm. long and *densely hairy inside*; corolla-lobes acute, *revolute*, densely bearded, almost as long as tube; drupe 5-ribbed (low-matted shrub of far W., Grampians, also Providence Ponds & Howe Range areas in Gippsland):

*S. adscendens* R. Br. in *Prodr. Flor. Nov. Holl.* 537 (1810).

*Illust.*: Cochrane, Fuhrer Rotherham & Willis, *Flowers & Plants Vict.* t. 94, col. (1968); King & Burns, *Wildflowers Tasm.* 63, col. (1969); Black, *Flor. S. Aust.* ed. 2: fig. 921 (1952).

*Vern.*: Golden Heath. *Distr.*: CDEJWZ—also S.A., Tas., N.S.W.

Leaves *ovate*, finely pointed, *glabrous* and shining, 5-7 mm. long; sepals *acuminate*, 2-3 mm. long; corolla whitish, the tube  $\pm$  2 mm. long with *a few hairs in throat*; corolla-lobes equal to tube, copiously bearded (small rare shrub on S. fringes of Big Desert):

*S. exarrhena* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 6: 31 (1867).

*Leucopogon exarrhenus* F. Muell. *l.c.* 1: 178 (1859).

*Vern.*: Desert Stypelia. *Distr.*: C—also S.A.

## ASTROLOMA R. Br. (1810)

1. Leaves *narrow-linear* with strongly *revolute margins* and thick mid-rib, 10-25 mm. long,  $\pm$  0.5 mm. wide or less; sepals  $\pm$  10 mm. long, *pubescent*; corolla 16-20 mm. long, *yellow*, reddish at base and green on lobes, *without* any scales or hair-tufts inside; fruit ovoid-globular, 10-15 mm. long (shrub 1-3 ft., scattered between Grampians and Genoa R.):

*A. pinifolium* (R. Br.) Benth. *Flor. aust.* 4: 159 (1868).

*Stenanthera pinifolia* R. Br. *Prodr. Flor. Nov. Holl.* 538 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 117, col. (1968), as *Styphelia pinifolia*; Galbraith, *Wildflowers Vict.* ed. 3: t. 124 (1967); Reeves, *Wild Life* 5: 61 (1943) and 6: 274 (1944).

*Vern.*: Pine Heath. *Distr.*: CDJMSWX—also Tas., N.S.W.

—Leaves *linear to narrow-lanceolate*, flat or  $\pm$  convex, >1 mm. wide, the margins scabrid-ciliate; bracts and sepals *glabrous* (except in a Mallee form of *A. conostephioides*); corolla *wholly red*, bearing 5 fringed scales or 5 tufts of hairs inside below the middle

2. Shrub 1-3 ft. high; leaves usually 1-2 cm. long; bracts and bracteoles broad, *red*; calyx *scarlet, lustrous*, 12-15 mm. long; corolla scarlet,  $\pm$  20 mm. long, *pubescent* externally; fruit *visible* (widespread in Grampians and more southern Mallee):

*A. conostephioides* (Sond.) Benth. *Flor. aust.* 4: 158 (1868).

*Stenanthera conostephioides* Sond. in Lehm. *Plant. Preiss.* 1: 296 (1844-45).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 118, col. (1968), as *Styphelia behrii*; Black, *Flor. S. Aust.* ed. 2: fig. 919 F & G (1952); Galbraith, *Wildflowers Vict.* ed. 3: t. 123 (1967); Mueller, *Key Syst. Vict. Plants* 2: fig. 110 (1886), as *Styphelia sonderi*.

*Vern.*: Flame Heath. *Distr.*: BCDEHJ—also S.A., N.S.W.

—Shrub <1 ft. high, usually *prostrate*; leaves  $\pm$  1 cm. long; bracts and sepals greyish-green; calyx 5-6 mm. long; corolla 10-15 mm. long, relatively *slender, glabrous* externally; fruit greenish, *hidden* under the matted branches (very widespread except in Mallee and on open plains):

*A. humifusum* (Cav.) R. Br. *Prodr. Flor. Nov. Holl.* 538 (1810).

*Ventenatia humifusa* Cav. *Icon. & Descr. Plant.* 4: 28, t. 348 (1797).

*Illust.*: Cavanilles (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 34, col. (1968), as *Styphelia humifusa*; Black, *Flor. S. Aust.* ed. 2: fig. 922 (1952); Edwards in *Curtis's bot. Mag.* 35: t. 1439, col. (1812); Loddiges, *Bot. Cabinet* 16: t. 1554, col. (1829); Burbidge, *Flor. Aust. Cap. Terr.* fig. 292 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 662 (1971).

*Vern.*: Cranberry Heath. *Distr.*: BCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

## MELICHRUS R. Br. (1810)

*M. urceolatus* R. Br. *Prodr. Flor. Nov. Holl.* 539 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 319, col. (1968), as *Styphelia urceolata*; Ewart, *Flor. Vict.* fig. 315 (1931); Paterson in *Proc. Linn. Soc. N.S.W.* 82: 311 fig. 23-29 (1958); Burbidge, *Flor. Aust. Cap. Terr.* fig. 295 (1970).

*Vern.*: Urn Heath. *Distr.*: HJMNRSVWZ—also N.S.W., A.C.T., Qd.

## CHORISTEMON H. B. Williamson (1924)

*C. humilis* H. B. Williamson in *Vict. Nat.* 40: 231, t. 17 (1924).

*Illust.*: Williamson (*l.c.*).

*Vern.*: Choristemon. *Distr.*: N (Brisbane Ranges near Balliang).

## LEUCOPOGON R. Br. (1810)

1. Leaves flat or the margins  $\pm$  recurved 5  
     Leaves distinctly *concave* on upper-surface 2
2. Leaves ovate-oblong, *obtuse*, 2-4 mm. long; flowers *solitary* (rarely 2) and *nodding* from axils on *decurved pedicels*; corolla-lobes as long as tube, acuminate, recurved; ovary 5-locular; style  $\pm$  4 mm. long (far W., in Little & Big Deserts):

*L. woodsii* F. Muell. *Fragm. Phyt. Aust.* 1: 178 (1859).

*Vern.*: Nodding Beard-heath. *Distr.*: BC—also W.A., S.A.

—Leaves *acuminate*; flowers *not* pendent, usually in clusters 3

3. Flowers 1-3 in the leaf-axil, *reddish*, appearing in summer; sepals 3-4 mm. long, *acute*; ovary usually 3-locular; drupe ovoid-oblong, relatively *large* (5-7 mm. long) and strongly ribbed; leaves ovate to lanceolate, pungent, 8-20 mm. long (sandy heaths in Grampians, Little Desert & Mallee, dry rocky hills in N. & N.E. districts):

*L. rufus* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 178 (1838).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 288 (1965).

*Vern.*: Ruddy Beard-heath. *Distr.*: ABCDFHJMRV—also S.A., N.S.W.

—Flowers several in *short dense spikes*, terminal and in upper axils, *white*; sepals 2-2.5 mm. long, *obtuse*; drupe < 5 mm. long 4

4. Leaves 7-15 mm. long or more, ovate-lanceolate, *acuminate*, not cordate at base, straight towards apex, with 3 conspicuous *parallel ribs* beneath; ovary 4- to 5-locular (very widespread):

*L. virgatus* (Labill.) R. Br. *Prodr. Flor. Nov. Holl.* 543 (1810).

*Styphelia virgata* Labill. *Nov. Holl. Plant. Specim.* 1: 46, t. 64 (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 51, col. (1968), as *Styphelia ericoides*; Galbraith, *Wildflowers*

*Vict. ed. 3: t. 128 (1967); Black, Flor. S. Aust. ed. 2: fig. 928 (1952); Reeves, Wild Life (Melb.) 7: 369 (1945); Ewart, Flor. Vict. fig. 316 (1931).*  
*Vern.: Common Beard-heath. Distr.: CDEHJKMNPRSTVW—also S.A., Tas., N.S.W., A.C.T., Qd.*

—Leaves 2-4 mm. long, ovate, *obtuse, subcordate* and stem-clasping at shortly petiolate base,  $\pm$  recurved towards apex, *palmately 5-veined* beneath; ovary 2-locular (far W., in Little & Big Deserts):

*L. costatus* (F. Muell.) J. M. Black in *Trans. roy. Soc. S. Aust.* 42: 52 (1918).  
*Styphelia costata* F. Muell. in *Wing Sth. Sci. Rec. new ser. 1: 75* (1885).

*Illust.: Garnet, Vegetation Wyperfeld Nat. Park fig. 11 n. 287 (1965).*  
*Vern.: Twiggy Beard-heath. Distr.: BC—also S.A.*

5. Flowers in distinct *leafless terminal spikes* or in *leafy head-like clusters* of  $>4$  (sometimes terminating very short lateral branches, or with a few in the uppermost leaf-axils also) 14  
 Flowers solitary, paired or in small axillary clusters of 3-4 (sometimes crowded into what appears to be a leafy raceme) 6
6. Flowers in *pairs or small clusters*, but sometimes with a few solitary flowers also 10  
 Flowers normally *all solitary*, rarely with a few pairs also present (shrubs either from W. & N.W. of Grampians or highlands E. & N.E. of Macalister R.) 7
7. Leaves 2-4 mm. long, *suborbicular, cordate* at base, pungently mucronate, entire; sepals 2-3 mm. long, acuminate, shorter than corolla-tube; corolla-lobes acuminate, *very shortly bearded* (low wiry shrub, from Victoria Range to Little & Big Deserts):

*L. clelandii* E. Cheel in *Trans. roy. Soc. S. Aust.* 39: 98 (1915).

*Illust.: Black, Flor. S. Aust. ed. 2: fig. 931 (1952); Swaby, Vict. Nat. 57: t. 6 opp. 45 (1940).*  
*Vern.: Cleland's Beard-heath. Distr.: BCD—also S.A.*

—Leaves *ovate to lanceolate, not cordate* at base; corolla-lobes densely invested with long white hairs (shrubs of Gippsland and N.E.) 8

8. Sepals *obtuse*, about as long as corolla-tube (2-2.5 mm.); corolla-lobes  $\pm$  2 mm. long; style very short ( $\pm$  0.5 mm.); fruit *minute*; leaves  $\pm$  hairy, 2-4 mm. long, abruptly contracted into a pungent point:

*L. attenuatus* A. Cunn. in *Field Geogr. Mem. N.S.W.* 341 (1825).

*Vern.: Grey Beard-heath. Distr.: VWZ—also N.S.W., A.C.T.*

—Sepals *acute*, 2-3 mm. long; style  $\pm$  5 mm. long; fruit *conspicuous, yellow to orange*; leaves often to 10 mm. long or more 9

9. Stems long, *trailing*,  $<1$  ft. high; sepals *broadly acute*; corolla-lobes at least 2 mm. long,  $\pm$  *equal to tube*; style usually *hairy* at base:

*L. stuartii* F. Muell. ex Sond. in *Linnæa* 26: 249 (1854).

*L. fraseri* sens. Ewart *Flor. Vict.* 933 (1931) atque Benth. *Flor. aust.* 4: 218 (1868), non strict. A. Cunn. (1839)—endemic in N.Z.;  
*Pentachondra mucronata* Hook. f. in Hook. *Lond. J. Bot.* 6: 270 (1847), non *Leucopogon mucronatus* DC. (1839).

*Vern.*: Sharp Beard-heath. *Distr.*: RSWZ—also Tas., N.S.W., A.C.T.

—Stems *erect*, 1-3 ft. high; sepals *acuminate*; corolla-lobes <2 mm. long, much *shorter than tube* ( $\pm$  5 mm.); style *glabrous*:

*L. juniperinus* R. Br. *Prodr. Flor. Nov. Holl.* 546 (1810).

*Epacris villosa* Cav. *Icon. & Descr. Plant.* 4: 27, t. 347 fig. 2 (1797), non *Leucopogon villosus* R. Br. (1801).

*Illust.*: Cavanilles (*l.c.*); Loddiges, *Bot. Cabinet* 5: t. 447 (1820).

*Vern.*: Long-flower Beard-heath. *Distr.*: RSVW—also N.S.W., Qd.

10. Leaves broadly *ovate to orbicular*, 5-8 mm. diam., with *cordate* base, thick, rigid, mucronate; flowers usually 2, rarely 1 or 3; sepals pale, obtuse, 3-4 mm. long, almost equal to corolla-tube (stout shrub to 3 ft. on Mallee heaths):

*L. cordifolius* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 121 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 930 (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 286 (1965).

*Vern.*: Heart-leaf Beard-heath. *Distr.*: ABCFGH—also W.A., S.A., N.S.W.

—Leaves oblong or lanceolate, the base *not cordate* (extra-Mallee shrubs)

11

11. Foliage rather *sparse*, on *very spreading* wiry branches, the narrow-lanceolate leaves *shiny above*, usually <1 cm. long; flowers *pendulous*, mostly in pairs,  $\pm$  6 mm. long (scattered on stony ranges from Avoca R. east to N.S.W. border):

*L. biflorus* R. Br. *Prodr. Flor. Nov. Holl.* 545 (1810).

*Vern.*: Twin-flower Beard-heath. *Distr.*: NRSVWZ—also N.S.W., Qd.

—Foliage usually *crowded*, on *erect* branches; flowers *never pendulous* 12

12. Sepals 2.5-3 mm. long, *obtuse*, *longer than* corolla-tube; ovary 2-locular; flowers usually 1-2; leaves *erect*, *lanceolate*, *glabrous*, 1-2 cm. long (shrub 1-2 ft. high, in Marlo district & Howe Ranges):

*L. esquamatus* R. Br. *Prodr. Flor. Nov. Holl.* 546 (1810).

*Vern.*: Swamp Beard-heath. *Distr.*: Z—also Tas. (central Flinders Id), N.S.W.

—Sepals  $\pm$  2 mm. long, *acute*, as long as or shorter than corolla-tube; ovary 3- or 5-locular; flowers 2-4 in very short spikes (shrubs 2-6 ft. high)

13

13. Leaves *oblong, obtuse, mucronate, pubescent*, the margins manifestly *recurved*, usually <1 cm. long (very widespread variable heathland shrub):

*L. ericoides* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 543 (1810).

*Styphelia ericoides* Sm. *Specim. Bot. New Holl.* 48 (1793-95).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 929 (1952); Leithhead, *Wild Life (Melb.)* 2: 10 (Aug. 1940); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 186 (1901), as *Styphelia ericoides*.

*Vern.*: Pink Beard-heath. *Distr.*: CDEJKMNPSTVWZ—also S.A., Tas., N.S.W., Qd:

—Leaves *oblanceolate, acute, ± pungent, glabrous and shiny, flat* or very slightly convex, mostly >1 cm. long (shrub to 3 ft., among granite rocks along Snowy R. below Buchan R. confluence, where apparently endemic):

*L. riparius* N. A. Wakefield in *Vict. Nat.* 73: 59 (1956).

*Vern.*: River Beard-heath. *Distr.*: W (Snowy R.).

14. Leaves *ovate, often cordate*, shortly petiolate, <7 mm. long, *flat, shiny on both surfaces*; branchlets shortly but densely hairy; spikes few-flowered; corolla-tube as long as the very obtusely lobed calyx-corolla-lobes shorter than tube; fruit globular, 5-locular, red (sub-alpine shrub, 4-8 ft., from Lake Mountain to N.S.W. border):

*L. maccraei* F. Muell. in *Trans. phil. Soc. Vict.* 1: 106 (1855).

*Vern.*: Subalpine Beard-heath. *Distr.*: SVWZ—also N.S.W.

—Leaves *oblong, lanceolate or broadly oblanceolate*, the margins *± recurved* 15

15. Leaves *small* (mostly <12 mm. long and <3 mm. wide), *oblong*; plants sometimes conspicuously *pubescent*; flower-spikes usually <1 cm. long 20

Leaves *large* (mostly >12 mm. long and >3 mm. wide), lanceolate to obovate, plant almost or quite *glabrous*; flower-spikes usually 1 cm. long or more (near-coastal or subalpine) 16

16. Flower-spikes *recurved and pendent*, 4- to 8-flowered; sepals 2.5-3 mm. long; corolla-tube 3-4 mm. long, *exceeding calyx*, the lobes *± 1 mm.*; ovary 2-locular; leaves 12-20 mm. long, *broadly oblanceolate to obovate*, thickish (alpine to subalpine, on and E. from Baw Baws):

*L. gelidus* (F. Muell. ex Benth.) N. A. Wakefield in *Vict. Nat.* 73: 59 (1956).

*L. lanceolatus* (Sm.) R. Br. var. *gelidus* F. Muell. ex Benth. *Flor. aust.* 4: 186 (1868).

*Vern.*: Beard-heath. *Distr.*: RSVWZ—also N.S.W., A.C.T.

—Flower-spikes *not* or hardly recurved; corolla-tube <3 mm. long, *not* or scarcely exceeding calyx; leaves mostly 20 mm. long or more, lanceolate, elliptic or oblanceolate 17

17. Leaves rigid, acuminate, their upper surfaces *boldly striated* with 3-7 parallel *translucent* (alternately long and short) nerves, mostly  $\pm 20 \times 5$  mm.; spikes to 15 mm. long, with few (to 9) loosely arranged flowers; sepals bluntish,  $\pm 3$  mm. long; ovary 2-locular (higher summits of Grampians, also Mts. Langi Ghiran & Ben Nevis east from Ararat, endemic in W. Victoria):

*L. neurophyllus* F. Muell. *Fragm. Phyt. Aust. 1*: 37 (1858).

*Vern.*: Veined Beard-heath. *Distr.*: DJ.

—Leaves thin, *finely veined* (hardly striated), the nerves *not* translucent; sepals 2 mm. long or less (chiefly lowland or foothill shrubs) 18

18. Flowers interrupted and *well separated* on the *very slender* spike; corolla-lobes usually *strongly reflexed*; ovary 2-locular (shrub to 15 ft.):

*L. lanceolatus* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 541 (1910).

*Styphelia lanceolata* Sm. *Specim. Bot. New Holl.* 49 (1793-95).

*Illust.*: Ewart, *Handb. For. Trees* t. 202 (1925); Hooker in *Curtis's bot. Mag.* 59: t. 3162 (1832); Sulman, *Aust. Wild Flowers* ser. 2: t. 17 (1913); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: fig. 2705 c-d (1926), as *Styphelia lanceolata*.

*Vern.*: Lance Beard-heath. *Distr.*: DEKSVWXZ—also Tas., N.S.W., Qd.

—Flowers *densely arranged* on spike; corolla-lobes spreading; ovary 5-locular 19

19. Shrub 5-12 ft. tall; leaves mostly  $< 3$  cm. long, usually  $\pm$  *oblanceolate* and often bluntish; ovary *tapering* into style, the whitish fruit *ovoid-globose* (coastal and near-coastal, chiefly on dunes where widespread):

*L. parviflorus* (Andr.) Lindl. in *Edwards's bot. Reg.* 18: t. 1560, col. (1833).

*Styphelia parviflora* Andr. *Bot. Repos.* 4: t. 287, col. (1803).

*Illust.*: Drake in Lindley (*l.c.*); Andrews (*l.c.*); Bishop in Weste, *Victoria's Resources* 6<sup>a</sup>: 59 (1964); Lee, *Wild Life (Melb.)* 8: 45 (1946); Ewart, *Handb. For. Trees* t. 203 (1925), as *L. richiei*; Hooker in *Curtis's bot. Mag.* 60: t. 3251, col. (1833), as *L. richiei*.

*Vern.*: Coast Beard-heath. *Distr.*: EKNPTWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Shrub to 3 ft. high, usually  $\pm$  *cumin-scented*, the branches acutely angled; leaves mostly 3-4 cm. long, usually *narrow-lanceolate* and much recurved at margins; ovary *truncate*, the fruit *depressed-globose* (coastal and near-coastal heaths, as far E. as Orbost district):

*L. australis* R. Br. *Prodr. Flor. Nov. Holl.* 541 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 926 (1952); Garnet, *Wildflowers Wilson's Prom.* fig. 670 (1971).

*Vern.*: Spike Beard-heath. *Distr.*: EKPTW—also W.A., S.A., Tas., N.S.W.

20. Leaf-surfaces *glabrous*, but the margins bearing *long fine cilia*; flower-spikes to 5 mm. long, few-flowered, hardly exceeding the oblong

leaves (to  $4 \times 1$  mm.); sepals  $\pm 1$  mm. long, acute, twice as long as corolla-tube; ovary 3-locular (low alpine plant with very numerous, almost *filiform branches*, on damp heaths along stream-sides; apparently endemic in Victoria):

**L. pilifer** N. A. Wakefield in *Vict. Nat.* 73: 58 (1956).

*Vern.*: Thready Beard-heath. *Distr.*: VW (Bogong High Plains, Nunniong Plateau).

—Leaf-surfaces pubescent or the margins without long cilia; inflorescences *conspicuous*; sepals 2-3 mm. long 21

21. Leaves *thickish*, their upper-surfaces *glabrous and shiny* (except rarely when young), the under-sides *glaucous* and *margins entire*; sepals *very obtuse*; fruit *globular, pulpy*, usually red, 5-locular (alpine to sub-alpine) 25

Leaves  $\pm$  *thin*, their upper-surfaces sometimes *pubescent, dull*, the margins  $\pm$  *spinulose-denticulate*; fruit  $\pm$  *oblong*, greenish, *not pulpy*, 2- to 4-locular 22

22. Leaf-surfaces *pubescent*; sepals *acute*, quite pubescent; corolla-lobes *as long as tube*; spikes many-flowered 24

Leaf-surfaces *glabrous*, but the margins *spinulose-denticulate*; sepals *obtuse*, pubescent only at apex; corolla-lobes *shorter than tube*; ovary 2-locular 23

23. Leaves always *straight*, the margins usually *strongly recurved*; inflorescences *erect* (near-coastal heaths of Gippsland):

**L. collinus** (Labill.) R. Br. *Prodr. Flor. Nov. Holl.* 543 (1810).

*Styphelia collina* Labill. *Nov. Holl. Plant. Specim.* 1: 47, t. 65 (1805).

*Illust.*: Labillardière (l.c.); Fitch in Hooker f., *Flor. Tasm.* 1: t. 75 fig. A, col. (1857), as *L. ciliatus*; Pescott, *Native Flowers Vict.* t. opp. 82 [1914], as *Styphelia collina*; Summerhayes, *Kew Bull.* 1926: 243 fig. 2 (1926), as *S. collina*—flower only.

*Vern.*: Fringed Beard-heath. *Distr.*: STWZ—also S.A., Tas., N.S.W.

—Leaves usually  $\pm$  *spirally twisted*, the margins *not* or hardly recurved; inflorescences *often nodding* (western heaths—Anglesea & Brisbane Ranges, Mt. Richmond, Lower Glenelg R., Grampians & Little Desert; apparently endemic in Victoria):

**L. glacialis** Lindl. in Mitch. *Three Exped. E. Aust.* 2: 174 (1838).

*Vern.*: Twisted Beard-heath. *Distr.*: CDEJKNP.

[Very close to, and perhaps not specifically distinct from, *L. collinus* (q.v.).]

24. Inflorescences rather *loose*, often 1-2 cm. long, the spikes in clusters terminating *main stems*; ovary 3- to 4-locular; leaf 6-15 mm. long, the *acuminate apex* often  $\pm$  *recurved* (apparently endemic in Victoria—Little Desert & Grampians, with disjunct occurrence near Bonang in far E.);



*L. thymifolius* Lindl. ex Benth. *Flor. aust.* 4: 189 (1868).

*Vern.*: Thyme Beard-heath. *Distr.*: CDJZ.

—Inflorescences *dense*, short (<1 cm. long), mostly on very short *lateral branchlets*; ovary 2-locular; leaf mostly <6 mm. long, the *bluntish apex straight* (far E. Gippsland, with disjunct occurrences at Mt. Macedon & Lerderderg Ranges):

*L. pilibundus* A. Cunn. ex DC. *Prodr.* 7: 746 (1839).

*L. microphyllus* sens. Ewart. *Flor. Vict.* 929 (1931), *non* (Cav.) R. Br. (1810).

*Vern.*: Hairy Beard-heath. *Distr.*: NWZ—also N.S.W., A.C.T.

25. Leaves oblong, the margins usually *recurved*; sepals  $\pm$  2 mm. long; corolla-tube 2.5-3.5 mm. long, *slightly exceeding* calyx, the lobes manifestly *bearded*; style 1-1.8 mm. long:

*L. suaveolens* Hook. f. in Hook. *Icon. Plant.* 9: sub t. 898 (1852).

*L. hookeri* Sond. in *Linnæa* 26: 248 (1854).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 495 & 496, *col.* (1968), as *Styphelia suaveolens*; Sleumer in *Flor. males.* 6: 429 fig. 6 (1964), as *S. suaveolens*; Fitch in Hooker f., *Flor. Tasm.* 1: t. 75 fig. B, *col.* (1857), as *L. hookeri*.

*Vern.*: Mountain Beard-heath. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T., Qd, N.Z., N.G.

[Two distinct forms, sometimes co-extensive, occur in Victoria—one late-flowering (Dec.-Jan.) and seldom > 1 ft. high, the other early-blooming and forming a slender shrub 1-5 ft. tall. Only the former seems to ascend into the higher alps, above tree-line.]

—Leaves *flat* (to 7 × 1.5 mm.); sepals <2 mm. long; corolla-tube *not* or hardly exceeding calyx, the lobes glabrous or *minutely papillose* on inner-surfaces; style  $\pm$  0.5 mm. long (higher alps):

*L. montanus* (R. Br.) J. H. Willis in *Vict. Nat.* 73: 56 (1956).

*Lissanthe montana* R. Br. *Prodr. Flor. Nov. Holl.* 540 (1810).

*Vern.*: Snow Beard-heath. *Distr.*: SV (Mts. Bogong, Nelse, Feathertop & Loch)—also Tas., N.S.W.

#### CYATHODES Labill. (1805)

*C. juniperina* (Forst. & Forst. f.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 618 (1917).

*Epacris juniperina* Forst. & Forst. f. *Charact. Gen. Plant.* 20, t. 10 fig. n (1776);

*C. acerosa* sens. Benth. *Flor. aust.* 4: 170 (1868), *non Ardisia acerosa* Gært. (1791).

*Illust.*: Willis, *Vict. Nat.* 58: t. 8 opp. 78 (1941), as *C. acerosa*; Labillardière, *Nov. Holl. Plant. Specim. 1*: t. 69 (1805), as *Styphelia oxycedrus*; Garnet, *Wildflowers Wilson's Prom. t. col. opp. title page* (1971).  
*Vern.*: Crimson Berry. *Distr.*: PT—also Tas., N.Z.

[Australian & southern New Zealand populations are referable to the var. *oxycedrus* (Labill., ut *Styphelia* sp.) H. H. Allan *Flor. N.Z. 1*: 516 (1961), which is distinguished by its longer wider leaves (18-20 × 1-2 mm.) with longer pungent tips ( $\pm$  2 mm.) than in the typical form.]

## LISSANTHE R. Br. (1810)

*L. strigosa* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 540 (1810).

*Styphelia strigosa* Sm. *Specim. Bot. New Holl.* 48 (1793-95).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 95, col. (1968), as *Styphelia strigosa*; Galbraith, *Wildflowers Vict.* ed. 3: t. 121 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 924 (1952); Relph in Pescott, *Native Flowers Vict.* t. opp. 72 (1914), as *Brachyloma daphnoides*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 289 (1970).

*Vern.*: Peach Heath. *Distr.*: CDHJMNPRSVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

## MONOTOCA R. Br. (1810)

1. Leaf-blades 3-5 mm. long, *rotund* but appearing saddle-shaped through the tightly recurved lateral margins, white underneath where lined with 15-25 veins that spread fanwise, the apex bluntish; flowers solitary in upper axils, their petals conspicuously papillose on inner surfaces (wiry prostrate or ascending shrub <1 ft. high, endemic on N.E. portion of Nunniong Plateau, N.E. Gippsland):

*M. rotundifolia* J. H. Willis in *Muelleria 1*<sup>3</sup>: 141 (1967).

*Vern.*: Trailing Monotoca. *Distr.*: W (Brumby Point on Nunniong Plateau).

—Leaf-blades >6 mm. long, oblong-linear, the veins longitudinal and parallel or almost so; flowers 2 or more together, their petals smooth (erect shrubs 1-15 ft. high)

2. Leaves convex, 7-15 mm. long, the apex  $\pm$  pungent; flowers 2-4 in short crowded clusters, appearing in late summer or autumn; drupe yellowish, 2-3 mm. long (widespread shrub, 1-3 ft. high, on poor sandy soils):

*M. scoparia* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 547 (1810).

*Styphelia scoparia* Sm. *Specim. Bot. New Holl.* 48 (1793-95).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 372, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 925 (1952); Burbidge, *Flor. Aust. Cap. Terr.* fig. 290 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 676 (1971).

*Vern.*: Prickly Broom-heath. *Distr.*: CDEJNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Leaves flat, 10-20 mm. long, the apex shortly mucronate; flowers few or many in short but distinct spikes, appearing in springtime; drupe

orange or reddish, 3-4 mm. long (tall shrub or small tree, chiefly coastal):

*M. elliptica* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 546 (1810).

*Styphelia elliptica* Sm. *Specim. Bot. New Holl.* 49 (1793-95).

*Illust.*: Gordon in Ewart, *Handb. For. Trees* t. 204 (1925).

*Vern.*: Tree Broom-heath. *Distr.*: EKSTWZ—also Tas., N.S.W., Qd.

#### ACROTRICHE R. Br. (1810)

1. Leaves 2-4 mm. long, *ovate-lanceolate to subcordate*, glabrous,  $\pm$  *reflexed*; flowers 12-20 in *longish spikes* massed on old leafless stems toward base of plant; ovary 2- to 3-locular, with hairs on upper half (uncommon spreading, intricately branched shrub of far W. Wimmera):

*A. depressa* R. Br. *Prodr. Flor. Nov. Holl.* 548 (1810).

*Illust.*: Paterson, *Proc. Linn. Soc. N.S.W.* 85: 88 fig. 56-62 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 936 (1952).

*Vern.*: Wiry Ground-berry. *Distr.*: CJ—also W.A., S.A.

—Leaves  $>4$  mm. long, *never reflexed*; flowers  $<11$  together in *clusters or short spikes* in axils of *previous year's leaves*; ovary 4- to 6-locular 2

2. Leaves *flat, obtuse* or with blunt callous point, *ovate to oblong*, thick, glabrous; flowers 3-6 in spike; ovary *glabrous* (bushes to 1 ft. high on calcareous tracts of far S.W. coast and Glenelg R.):

*A. cordata* (Labill.) R. Br. *Prodr. Flor. Nov. Holl.* 548 (1810).

*Styphelia cordata* Labill. *Nov. Holl. Plant. Specim.* 1: 46, t. 63 (1805).

*Illust.*: Labillardière (*l.c.*); Paterson, *Proc. Linn. Soc. N.S.W.* 85: 86 fig. 48-55 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 935 (1952).

*Vern.*: Coast Ground-berry. *Distr.*: DE—also W.A., S.A., Tas. (Flinders Id).

—Leaves *pungent-pointed, lanceolate*

3. Flowers 3-5 per cluster; corolla-tube 2 mm. long; ovary *glabrous*; leaves *flat, glabrous*, 8-13 mm. long (divaricate shrub 3-5 ft. high, on rocky hills of far N.E. Gippsland):

*A. divaricata* R. Br. *Prodr. Flor. Nov. Holl.* 547 (1810).

*Illust.*: Paterson, *Proc. Linn. Soc. N.S.W.* 85: 78 fig. 1-6 (1960).

*Vern.*: Tall Acrotriche. *Distr.*: VW—also N.S.W., A.C.T., Qd.

—Flowers 5-10 per cluster; corolla-tube 2.5-5 mm. long; ovary *hairy* on upper half; leaf-margins  $\pm$  *serrulate-ciliate* 4

4. Shrub *prostrate and trailing*, pubescent, with *adventitious roots*; leaves  $\pm$  *complanate*, 2-8 mm. broad, with *slightly recurved* margins; bracts and calyx *pilose* (endemic in Victoria on loamy soils of moister forests):

**A. prostrata** F. Muell. in *Trans. Vict. Inst.* 40 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 427, col. (1968); Paterson, *Proc. Linn. Soc. N.S.W.* 85: 84 fig. 35-40 (1960).

*Vern.*: Trailing Ground-berry. *Distr.*: DEJNPST.

—Shrubs small, erect or diffuse and often matted, but *not* trailing and *without* adventitious roots; leaves *spirally* arranged, <3 mm. broad, *not* recurved; bracts and calyx *not* pilose

5. Leaves with *wide shallow grooves* between veins on the under-side, *thinnish* in texture, the margins *strongly serrulate-ciliate* and upper-surface usually with *long scattered hairs*; corolla-tube inflated, 4-5 mm. long (very widespread):

**A. serrulata** (Labill.) R. Br. *Prodr. Flor. Nov. Holl.* 547 (1810).

*Styphelia serrulata* Labill. *Nov. Holl. Plant. Specim.* 1: 45, t. 62 (1805).

*Illust.*: Labillardière (l.c.); Paterson, *Proc. Linn. Soc. N.S.W.* 85: 80 fig. 14-20 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 932 (1952); Bishop in Weste, *Victoria's Resources* 6: 59 (1964); Burbidge, *Flor. Aust. Cap. Terr.* fig. 294 (1970).

*Vern.*: Honey-pots. *Distr.*: BCDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W.

—Leaves with *deep grooves* between the veins, *thick* and rigid, *shiny* on upper-surface; corolla-tube 2.5-3 mm. long (scattered through W. Mallee and along coast from Portland to Wilson Promontory):

**A. affinis** DC. *Prodr.* 7: 757 (1839).

*Illust.*: Paterson, *Proc. Linn. Soc. N.S.W.* 85: 82 fig. 21-27 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 933 (1952).

*Vern.*: Ridged Ground-berry. *Distr.*: BCEKT—also S.A.

#### BRACHYLOMA Sond. (1844-45)

1. Leaves oblong, *entire*, very *obtuse*, with short apical point but *never* pungent, 5-10 × 2-4 mm.; flowers *white*, *without* bracts but with 2 ± unequal bracteoles; sepals bluntish, 1-2 mm. long; corolla-tube slender, 4-6 mm. long, *much longer* than the acute lobes (widespread shrub on poor sandy or drier rocky terrain):

**B. daphnoides** (Sm.) Benth. *Flor. aust.* 4: 173 (1868).

*Styphelia daphnoides* Sm. *Specim. Bot. New Holl.* 48 (1793-95).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 333, col. (1968); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 284 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 940 (1952); Pescott, *Native Plants Vict.* t. opp. 72 [1914]; Burbidge, *Flor. Aust. Cap. Terr.* fig. 291 (1970).

*Vern.*: Daphne Heath. *Distr.*: BCDEHJMNRSTVWZ—also S.A., N.S.W., Qd.

—Leaves oblong-lanceolate to linear, with ± *ciliate margins* and manifestly *pungent apices*; corolla-tube either <4 mm. long or rosy-red

2. Flowers coral- to salmon-red, with several *pink bracts*; sepals *obtuse*,

pink,  $\pm$  3-5 mm. long; corolla-tube *shorter than calyx*, *sharply constricted* beneath the *obtuse erect lobes*; leaves  $<1$  mm. wide (shrub 1-2 ft. on sand in Grampians, also Little & Big Deserts of far W.Vic.):

**B. ericoides** (Schlechtendal) Sond. in *Linnæa* 26: 247 (1854).

*Lobopogon ericoides* Schlechtendal in *Linnæa* 20: 620 (1847).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 82, col. (1968); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 285 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 919 H-1 & 938 (1952); Hooker, *Icon. Plant.* 11: t. 1038 (1868).

*Vern.*: Brush Heath. *Distr.*: BCDJM—also S.A., N.S.W.

—Flowers *whitish*, *without bracts*; sepals *acuminate*, never pink; corolla-tube at least *as long as calyx*, not constricted, the lobes *acute and spreading*; leaves  $>1$  mm. wide 3

3. Leaves *linear-lanceolate* with *long pungent points*; sepals and corolla-tube 2-3 mm. long; petals *acuminate* (uncommon erect or spreading shrub to 3 ft. high or more, in Grampians and near-coastal tracts of S.W.):

**B. depressum** (F. Muell.) Benth. *Flor. aust.* 4: 173 (1868).

*Lissanthe depressa* F. Muell. *Fragm. Phyt. Aust.* 1: 36 (1858).

*Vern.*: Spreading Brachyloma. *Distr.*: CDJ—also Tas.

—Leaves *oblong to lanceolate*, *shortly pungent*; sepals  $\pm$  2 mm. long, *shorter than corolla-tube*; petals *shortly acute*, *not acuminate* (ascending under-shrub  $<1$  ft. high, scattered from N.W. to Gippsland):

**B. ciliatum** (R. Br.) Benth. *Flor. aust.* 4: 173 (1868).

*Lissanthe ciliata* R. Br. *Prodr. Flor. Nov. Holl.* 541 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 939 (1952).

*Vern.*: Fringed Brachyloma. *Distr.*: CDEJKNMPT—also S.A., Tas.

#### PENTACHONDRA R. Br. (1810)

**P. pumila** (Forst. & Forst. f.) R. Br. *Prodr. Flor. Nov. Holl.* 549 (1810).

*Epacris pumila* Forst. & Forst. f. *Charact. Gen. Plant.* 20, t. 10 fig. a-h (1776).

*Illust.*: Forster (*l.c.*); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 489, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 417, col. (1967); Poole & Adams, *Trees & Shrubs N.Z.* 153 (1963); Mass, *Flowers aust. Alps* 23 (1967).

*Vern.*: Carpet Heath. *Distr.*: SV—also Tas., N.S.W., N.Z.

#### TROCHOCARPA R. Br. (1810)

**T. clarkei** (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 6: 57 (1867).

*Decaspora clarkei* F. Muell. in *Trans. phil. Soc. Vict.* 1: 106 (1855).

*Illust.*: Reeves in Willis, *Vict. Nat.* 61: t. 7 opp. 174 (1945), also 76\*: cover (Oct. 1959); Reeves in Weste, *Victoria's Resources* 6\*: 59 (1964); Reeves in *Vict. Year Book* 76: t. inter 18 & 19 (1962).

*Vern.*: Lilac Berry. *Distr.*: S (endemic in Victoria, between Lake Mtn., Mt. Buller & Mt. Wellington).

Family MYRSINACEÆ

RAPANEA Aubl. (1775)

*R. howittiana* F. Muell. ex Mez in *Pflanzenreich* IV 236 (Heft 9): 354 (1902).

*R. variabilis* sens. Ewart *Flor. Vict.* 935 (1931), non (R. Br.) Mez (1902).

*Illust.*: Read in Ewart, *Handb. For. Trees* t. 205 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 99 (1886); Mueller, *Plants indig. Colon. Vict.* t. 53 (1864-65)—all as *Myrsine variabilis*.

*Vern.*: Mutton-wood. *Distr.*: NSTWZ—also N.S.W.

[E. Y. Hosaka in *Occ. Pap. Bishop Mus.* 16\*: 25-76 (1940) concluded, after detailed investigation of Hawaiian species referred to the genus *Rapanea* by C. Mez, that this taxon is untenable in view of the great variability in connation of petals, shape of stigma and attachment of stamens; accordingly, he returned the various species to Linnæus's original genus *Myrsine*. This opinion was endorsed in H. H. Allan's *Flor. N.Z.* 540-543 (1961). However, W. R. B. Oliver had re-assessed the position in *Rec. Auckl. Inst. Mus.* 4: 111 (1951), expressing the desirability of restricting the circumscription of *Myrsine* to that of its type species, the widespread African *M. africana* L. which has the staminal filaments fused into an annulus (the upper part of which is free from petals). No such structure is to be found in any species of *Rapanea*, where the filaments are either free from each other or completely lacking. It is preferred here to follow Oliver and refer the single Victorian species (a small tree) to *Rapanea*.]

Family PRIMULACEÆ

1. Flowers yellow, conspicuous, in racemes or leafy panicles; leaves lanceolate, 2-4" long, scattered to whorled in 3's or 4's (tall erect perennials of far N.E. and E.) *Lysimachia* (p. 514)

Flowers not yellow; leaves <2" long; plants <1 ft. high 2

2. Flower-parts 4, the minute pinkish corolla shorter than calyx; flowers solitary and subsessile in axils of alternate ovate leaves 2-4 mm. long; capsule circumscissile (small erect annual <3" high)

\**Centunculus* (p. 515)

Flower-parts 5, if corolla ever shorter than calyx then leaves opposite; pedicels conspicuous 3

3. Leaves mostly obovate, alternate on branches; flowers in racemes, white or pink; capsule half-inferior, opening by 5 valves (chiefly perennials of damp places, often along coast)

*Samolus* (p. 515)

Leaves *ovate to lanceolate, opposite*; flowers *solitary in axils*; capsule quite superior (small glabrous annuals) 4

4. Corolla bright scarlet or blue, slightly longer than calyx; leaves *ovate*; capsule *circumscissile, many-seeded* (procumbent herb)

\**Anagallis* (p. 514)

Corolla minute, *hyaline*, much shorter than calyx; leaves *lanceolate*; capsule opening by 5 valves, 2- or 3-seeded (erect herb of Bendigo district)

\**Asterolinon* (p. 515)

### LYSIMACHIA L. (1753)

\**L. vulgaris* L. *Spec. Plant.* 1: 146 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 20: t. 13 (1964); Butcher, *New ill. Brit. Flor.* 2: fig. 933 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 212 fig. 2, col. (1927), also 5<sup>a</sup>: fig. 2862-64 (1927); Reichenbach, *Icon. Flor. germ.* 17: t. 1086 fig. II & III, col. (1855); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1871, col. (1924).

*Vern.*: Loosestrife. *Distr.*: V—also N.Z.

[Although stated by Ewart, *Flor. Vict.* 938 (1931), to be “widely spread in Victoria”, this moisture-loving Eurasian weed has not been observed anywhere in the State for several decades, and is represented at the Melbourne Herbarium only by two collections from Towong on the Upper Murray R., 1874 & 1883. The very similar, presumptively native *L. salicifolia* F. Muell. ex Benth. *Flor. aust.* 4: 269 (1868) is said to differ in having staminal filaments that are dilated at the base but not shortly united; only a single, inadequate Victorian collection is known, made at the mouth of the Snowy R. by F. Mueller in Feb. 1855—it has long since been presumed extinct in that locality.

In April 1971, at the Toorloo Arm of Lake Tyers in E. Gippsland, a colony of *L. japonica* Thunb. was discovered. This procumbent, slightly hairy herb is indigenous to India, China and Japan. Its spatulate, chickweed-like leaves ( $\pm 1$  cm. broad) are in opposite pairs, the solitary axillary flowers have yellow corollas  $\pm 6-8$  mm. across, and the capsule splits into 5 valves. It is not yet known whether *L. japonica* is thoroughly established in the district and warrants recognition as a naturalized alien.]

### \*ANAGALLIS L. (1753)

\**A. arvensis* L. *Spec. Plant.* 1: 148 (1753).

*Illust.*: Ewart, *Flora Vict.* fig. 317 (1931); Ross-Craig, *Drawings Brit. Plants* 20: t. 18 (1964); Muenscher, *Weeds* 359 (1947); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 75 A (1940); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 211 fig. 5, col. (1927); Reichenbach, *Icon. Flor. germ.* 17: t. 1082 fig. I & II, col. (1855); Burbidge, *Flor. Aust. Cap. Terr.* fig. 298 (1970); Everard, *Wild Flowers World* t. 33 fig. B, col. (1970), as ssp. *foemina*.

*Vern.*: Pimpernel. *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[The blue-flowered variety *cærulea* Govan *Flor. monspel.* 30 (1765) is also widespread in Victoria, but less frequent than the vermilion var. *arvensis*.]

\*CENTUNCULUS L. (1753)

\**C. minimus* L. *Spec. Plant.* 1: 116 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 943 (1952); Ross-Craig, *Drawings Brit. Plants* 20: t. 20 (1964), as *Anagallis minima*; Butcher, *New ill. Brit. Flor.* 2: fig. 939 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 211 fig. 6, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1878, col. (1924); Coste, *Flor. Franc.* 2: fig. 2453 (1903).

*Vern.*: Chaffweed. *Distr.*: CDEJNPTW—also S.A.

\*ASTEROLINON Link & Hoffmannsegg (1820)

\**A. linum-stellatum* (L.) Duby ex DC. *Prodr.* 8: 68 (1844).

*Lysimachia linum-stellatum* L. *Spec. Plant.* 1: 148 (1753).

*Illust.*: Coste, *Flor. Franc.* 2: fig. 2444 (1903), as *A. stellatum*; Reichenbach, *Icon. Flor. germ.* 17: t. 1086 fig. IV & V, col. (1855).

*Vern.*: Asterolinon. *Distr.*: M (Bendigo)—also S.A.

SAMOLUS L. (1753)

Stem-leaves mostly <1.5 cm. long, *thickish*, often *white-scurfy*; racemes *short*, often umbel-like; calyx 4-6 mm. long; corolla 6-10 mm. wide (salt-loving, chiefly coastal perennial with long-creeping stolons):

*S. repens* (Forst. & Forst. f.) Pers. *Synops. Plant.* 1: 171 (1805).

*Sheffieldia repens* Forst. & Forst. f. *Charact. Gen. Plant.* 18, t. 9 (1776).

*Illust.*: Forster (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 192, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 19, col. (1967); Curtis, *Student's Flor. Tasm.* 3: 468 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 945 (1952).

*Vern.*: Creeping Brookweed. *Distr.*: CDEJKNPTVWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

Stem-leaves 1.5-3 cm. long, *thin-textured*, *bright green*; racemes loose, *elongating*; calyx  $\pm$  3 mm. long; corolla  $\pm$  4 mm. wide (annual or short-lived perennial of shaded places near water, and uncommon):

*S. valerandii* L. *Spec. Plant.* 1: 171 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 946 (1952); Ross-Craig, *Drawings Brit. Plants* 20: t. 21 (1964); Butcher, *New ill. Brit. Flor.* 2: fig. 941 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: fig. 2875-76 (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1883, col. (1924); Burbidge, *Flor. Aust. Cap. Terr.* fig. 299 (1970).

*Vern.*: Brookweed. *Distr.*: VW—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust.

[The garden annual, *Primula malacoides* Franch. of W. China, is widely grown, produces copious seed and often persists in sheltered places near buildings. Its radical leaves are lax, ovate-oblong, deeply wrinkled and downy, the lilac to purplish flowers numerous in superposed umbels to 8" high.]



## Family PLUMBAGINACEÆ

LIMONIUM Mill. (1754)

1. Radical leaves *entire, glabrous*,  $\pm$  leathery, 1-3" long; flowering stems angular but *not winged*, much branched to form *open corymbose panicles* with flowers *secund* on branchlets; calyx 6-8 mm. long, *white to pale pink, spurred at base*, shortly 5-lobed above (perennial of coastal salt-marshes from Point Lonsdale to Port Albert):

*L. australe* (R. Br.) Kuntze *Rev. Gen. Plant.* 1: 395 (1891).

*Taxanthema australis* R. Br. *Prodr. Flor. Nov. Holl.* 426 (1810);

*Statice australis* (R. Br.) Spreng. *Syst. Veg.* 1: 959 (1824).

*Illust.*: Curtis, *Student's Flor. Tasm.* 3: 466 (1967); Mueller, *Key Syst. Vict. Plants*

2: fig. 30 (1886), as *Statice taxanthema*; Mueller, *Plants indig. Colon. Vict.* t. 65 (1864-65), as *S. australis*.

*Vern.*: Yellow Sea-lavender. *Distr.*: PT—also Tas., N.S.W., Qd.

—Radical leaves *lyrate, ciliate* or  $\pm$  *scabrid all over*, 2-4" long; flowering stems *prominently 3-winged*, the flowers in *short dense spikes* on the crowded floral branchlets; calyx >8 mm. long, *blue to violet, spurless* (Mallee plants) 2

2. Each wing of stems and branchlets 3-8 mm. broad, ending above in a *triangular lobe*; calyx *pale blue*,  $\pm$  10 mm. long, the 5 *acute lobes* of limb alternating with 5 bristle-like prolongations of the intervening nerves (*almost glabrous annual*):

\**L. thouinii* (Viv.) Kuntze *Rev. Gen. Plant.* 1: 396 (1891).

*Statice thouinii* Viv. *Flor. lybic. Specim.* 18, t. 11 fig. 1 (1824).

*Illust.*: Viviani (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 948 (1952); Hegi, *Ill. Flor Mittel-Eur.* 5<sup>2</sup>: fig. 2877 c-g (1927).

*Vern.*: Winged Sea-lavender. *Distr.*: ABFGHN—also S.A.

—Each wing of stems relatively narrow, ending in a *linear-lanceolate leaf-like appendage* 1-3 cm. long; calyx *bright blue or purplish*,  $\pm$  15 mm. long, almost *truncate*, with 5 very *obtuse shallow-lobes* (*scabrid perennial*, occasionally escaping from gardens and cemeteries):

\**L. sinuatum* (L.) Mill. *Gdnrs Dict.* ed. 8: n. 6 (1768).

*Statice sinuata* L. *Spec. Plant.* 1: 276 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 949 (1952); Hay & Synge, *Dict. gdn Plants* t. 326, col. (1969); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2320, col. (1927), as *Statice sinuata*; Coste, *Flor. Franc.* 3: fig. 3029 (1906), as *S. sinuata*; Everard, *Wild Flowers World* t. 33 fig. H, col. (1970).

*Vern.*: Notch-leaf Sea-lavender. *Distr.*: GH—also S.A.

[The tall-scrambling Leadwort, *Plumbago capensis* Thunb. of South Africa, is extensively grown as a fence-cover or hedge plant, tending to persist about derelict estates. The light green ovate-oblong leaves (2-4 cm. long) are glabrous but the sky-blue very slender corolla-tubes (3-5 cm. long) glandular hairy.]

## Family OLEACEÆ

1. Leaves *trifoliate* (the terminal leaflet linear-lanceolate and 1-4" long, the others shorter); flowers in small panicles; corolla white, fragrant, with tube  $\pm$  6 mm. long and 5-6 short imbricate lobes; fruit a black globoid *berry* to 1 cm. long (rare Mallee shrub to 5 ft. or a stout liane reaching 8-12 ft. in height) *Jasminum* (p. 517)  
Leaves *simple*, entire; corolla-lobes 4, the tube <5 mm. long (mostly <2 mm.) or none (tall shrubs or small trees) 2
2. Inflorescence a *terminal panicle*; corolla-tube at least *as long as lobes* (2-5 mm.); fruit a 2-seeded *berry* (escaped garden shrub) *\*Ligustrum* (p. 518)  
Inflorescence either a raceme, fascicle or reduced axillary panicle; corolla-tube *shorter than lobes* (sometimes rudimentary); fruit a *drupe* 3
3. Flowers *racemose*; corolla-lobes united only *at very base*; stigma *bilobed* (indigenous, highland and/or E. Gippsland shrubs or small trees) *Notelæa* (p. 517)  
Flowers panicate or fasciculate; corolla with short tube; stigma entire (escaped garden shrubs) 4
4. Leaves *whitish* beneath; flowers *paniculate*; drupe *ellipsoid* (15-25 mm. long) *\*Olea* (p. 518)  
Leaves *green and glabrous* beneath; flowers in *axillary fascicles*; drupe *globular* (<10 mm. diam.) *\*Phillyrea* (p. 518)

## JASMINUM L. (1753)

*J. lineare* R. Br. *Prodr. Flor. Nov. Holl.* 521 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 965 (1957); Myers in Turner, *Forage Plants Aust.* t. opp. 31 (1891); Fitch in Hooker, *Icon. Plant.* 9: t. 831 (1852).

*Vern.*: Desert Jasmine. *Distr.*: AFG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

## NOTELÆA Vent. (1803)

Leaves variably lanceolate, *acuminate*, 2-6" long, 2-3 cm. wide, distinctly finely and evenly *reticulate-veined* on both surfaces; calyx very *obscurely lobed*; corolla lobes *induplicate-valvate* in bud; ripe fruit ellipsoid-ovoid, 15-20 mm. long, dark purplish (tall shrub or slender tree E. from Bairnsdale):

*N. venosa* F. Muell. in *Trans. Vict. Inst.* 131 (1855).

*N. longifolia* sens. Ewart *Flor. Vict.* 941 (1931) atque auctt. plur., *non strict.* Vent. (1804).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 482, col. (1968); Cookson in Ewart, *Handb. For. Trees* t. 207 (1925)—both as *N. longifolia*.

*Vern.*: Large Mock-olive. *Distr.*: WZ—also N.S.W., Qd.

Leaves narrow-lanceolate but  $\pm$  *obtuse*, 1-3" long, 1-1.5 cm. wide, smooth, *without* any apparent reticulate venation; calyx-lobes  $\pm$  *half as long* as petals; corolla lobes  $\pm$  *imbricate* in bud; ripe fruit  $\pm$  *spherical*, 6-10 mm. diam., white, red, purple or almost black (spreading shrub or small tree in mountain forests from Otways to N.E. & far E., with disjunct occurrences at Hopkins R. Falls and in Grampians):

*N. ligustrina* Vent. *Choix Plant.* sub t. 25 (1804).

*Illust.*: Curtis, *Student's Flor. Tasm.* 3: 469 (1967); Cookson in Ewart, *Handb. For. Trees* t. 206 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 100 (1886); Mueller, *Plants indig. Colon. Vict.* t. 54 (1864-65).

*Vern.*: Privet Mock-olive. *Distr.*: DKNRSTVWZ—also Tas., N.S.W.

[In Degeners' *New illust. Flor. Hawaiian Islands* sub Fam. 300, *Oleaceæ* (1958), L. A. S. Johnson transferred this species to the Rafinesquian genus *Nestegis*, on the basis of its petal-æstivation which is  $\pm$  *imbricate* in the bud and never so distinctly induplicate-valvate as in other species of *Notelæa*. But, in his more recent revision of the genus *Notelæa*, in *J. Arnold Arbor.* 49: 362 (1968), P. S. Green has returned *N. ligustrina* to the latter genus, erecting for it a new generic section, *Ligustrina*.

Several other members of *Oleaceæ* are occasionally spontaneous (or long-persistent) in parts of Victoria, but can hardly be considered as naturalized aliens. The Mediterranean evergreen Jasmine-box (*Phillyrea angustifolia* L.) and the common Olive (*Olea europæa* L.) have both appeared on the steep escarpments of the Yarra R. at Studley Park. European Privet (*Ligustrum vulgare* L.) and Asiatic Lilac (*Syringa vulgaris* L.) sometimes persist by suckers on old garden-sites or former fence-lines.]

### Family LOGANIACEÆ

1. Calyx-lobes, corolla-lobes and stamens 5; style simple (shrubs or undershrubs with cymose inflorescences, rarely solitary flowers)

*Logania* (p. 520)

Calyx-lobes 2 or 4; corolla-lobes and stamens 4 2

2. Leaves <2 cm. long; flowers solitary in axils or in loose umbels; styles 2, with capitate stigmas (small herbs)

*Mitrasacme* (p. 518)

Leaves >3 cm. long; flowers numerous, fragrant, in cymose panicles; style simple (shrubs or small trees) 3

3. Corolla yellow or purplish (rarely white); calyx shortly lobed; staminal filaments short, the anthers included; stigma claviform

\**Buddleia* (p. 521)

Corolla creamy-white; calyx deeply lobed; staminal filaments 1-2 mm. long, the anthers slightly exserted; stigma capitate

\**Chilianthus* (p. 521)

### MITRASACME Labill. (1805)

1. Calyx 2-lobed; pedicels much longer than leaves (small annuals to 4" high, with filiform peduncles and umbellate flowers)

5

Calyx 4-lobed (perennials, often matted)

2

2. Habit *erect*; flowers 3-5 in irregular *umbels*, white or pinkish, showy, 5 mm. long or more, bearded in throat; pedicels always *much longer* than leaves which are 4-10 mm., *lanceolate to oblong* and  $\pm$  *shining* (near-coastal heaths east from Waratah Bay):

*M. polymorpha* R. Br. *Prodr. Flor. Nov. Holl.* 452 (1810).

*Illust.*: Sulman, *Aust. Wild Flowers* ser. 2: t. 46 (1913).

*Vern.*: Varied Mitrewort. *Distr.*: TWZ—also N.S.W., Qd.

—As for the last, but leaves *ovate and dull* and inflorescence *never umbellate* (W. Otway region, also Haunted Hills near Yallourn):

*M. pilosa* Labill. var. *stuartii* Hook. f. [See succeeding species]

—Habit *prostrate*; flowers *solitary* in axils; pedicels normally *no longer* than leaves (but sometimes slightly exceeding them in fruit of *M. pilosa*)

3. Stems *coarsely hirsute*; leaves 3-7 mm. long, broadly ovate to oblong-lanceolate,  $\pm$  *ciliate*; calyx  $\pm$  *hispid*; corolla-lobes *much shorter* than tube which is *densely bearded* at throat (widespread on lowland heaths):

*M. pilosa* Labill. *Nov. Holl. Plant. Specim.* 1: 36, t. 49 (1805).

*Illust.*: Labillardière (*l.c.*); Curtis, *Student's Flor. Tasm.* 3: 476 (1967)—var. *stuartii*; Garnet, *Wildflowers Wilson's Prom.* fig. 683 (1971).

*Vern.*: Hairy Mitrewort. *Distr.*: CDEJKNPTWZ—also S.A., Tas., N.S.W.

[The variety *stuartii* Hook. f. *Flor. Tasm.* 1: 274 (1857) differs in having flowers on *slender pedicels* to 4 cm. long; it is much more frequent in Tasmania than in Victoria—a few parts of central south.]

—Stems *glabrous* or nearly so; leaves 2-4 mm. long, *glabrous* or only very slightly *ciliate*; calyx *glabrous*; corolla-tube *glabrous* inside (damp places in alps and subalps)

4. Leaves  $\pm$  *membranous*, lanceolate to ovate, *sessile*; sepals *united* to the middle; corolla-tube *much shorter* than lobes; anthers *exserted* (widespread in eastern subalps):

*M. serpyllifolia* R. Br. *Prodr. Flor. Nov. Holl.* 454 (1810).

*Vern.*: Thynne Mitrewort. *Distr.*: NRSWZ—also Tas., N.S.W.

—Leaves *coriaceous*, obovate to  $\pm$  orbicular, distinctly *petiolate*; sepals *free* almost to the base; corolla-tube *much longer* than lobes; anthers *included*, *sessile* in throat (Baw Baws and Bogong High Plains):

*M. montana* Hook. f. ex Benth. in *J. Linn. Soc. (Bot.)* 1: 93 (1856).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 88 fig. C, col. (1857).

*Vern.*: Mountain Mitrewort. *Distr.*: SV—also Tas., N.Z. (var. *helmsii* Kirk).

5. Height usually 2-4"; leaves *connate* at base, *oblong-lanceolate*,  $\pm$  4-6 mm. long; pedicels 1-4 cm. long; styles *cohering at summit* during anthesis; fruiting calyx  $\pm$  4 mm. long, the 2 prominent lobes *widely divergent*:

*M. paradoxa* R. Br. *Prodr. Flor. Nov. Holl.* 454 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 968 G-H (1957); Fitch in Hooker f., *Flor. Tasm.* 1: t. 88 fig. A, col. (1857); Garnet, *Wildflowers Wilson's Prom.* fig. 682 (1971).

*Vern.*: Wiry Mitrewort. *Distr.*: BCDEJKNMPT—also W.A., S.A., Tas., N.S.W.

—Height rarely exceeding 1"; leaves hardly connate,  $\pm$  linear, 2-4 mm. long; pedicels <1 cm. long; styles quite free at and after anthesis; fruiting calyx  $\pm$  3 mm. long, the 2 lobes not or only slightly divergent:

*M. distylis* F. Muell. in *Trans. phil. Soc. Vict.* 1: 20 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 969 (1957); Fitch in Hooker f., *Flor. Tasm.* 1: t. 88 fig. B, col. (1857).

*Vern.*: Tiny Mitrewort. *Distr.*: CDEJNPS—also S.A., Tas.

[J. Hutchinson in his *Fam. Flowering Plants* ed. 2, 1 (Dicotyledons): 377 (1959), has assigned *Mitrasacme* to the derivative family *Spigeliaceæ*, but most Australian systematists prefer the traditional, wider circumscription of *Loganiaceæ*.]

#### LOGANIA R. Br. (1810)

1. Leaves reduced to minute scales; flowers in clusters at upper nodes, bisexual; calyx-lobes acutish; stamens inserted at throat of corolla-tube (rare, rush-like undershrub of N.W. Mallee):

*L. nuda* F. Muell. *Fragm. Phyt. Aust.* 1: 129 (1859).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 968 A-F (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 11 n. 290 (1965); Mueller, *Key Syst. Vict. Plants* 2: fig. 97 (1886); Mueller, *Plants indig. Colon. Vict.* t. 60 (1864-65).

*Vern.*: Bare Logania. *Distr.*: AB—also W.A., S.A., N.S.W.

—Leaves normal, always present; flowers cymose or solitary, sometimes unisexual; calyx-lobes obtuse; stamens inserted at middle of corolla-tube

2. Shrub procumbent, <6" high; leaves  $\pm$  oblong, <1 cm. long; flowers solitary in axils, subsessile (heaths of far E. Gippsland):

*L. pusilla* R. Br. *Prodr. Flor. Nov. Holl.* 456 (1810).

*Illust.*: White in Bailey, *Compr. Cat. Qd Plants* fig. 314 (1913); Bauer in Endlicher *Icon. Gen. Plant.* t. 58 (1838).

*Vern.*: Tiny Logania. *Distr.*: Z (mouth of Betka R.)—also N.S.W., Qd.

—Shrubs erect, >1 ft. high; leaves mostly >1 cm. long; flowers in pedunculate cymes (often compact)

3. Leaves  $\pm$  cordate, orbicular to ovate-oblong, flat, 1-3 cm. long; corolla manifestly bearded at throat; capsule 5-6 mm. long (calcareous, near-coastal areas west from Cape Otway, including Glenelg R.):

*L. ovata* R. Br. *Prodr. Flor. Nov. Holl.* 455 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 224, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 972 (1957).

*Vern.*: Oval-leaf Logania. *Distr.*: DEK—also W.A., S.A.

—Leaves lanceolate to linear; corolla glabrous at throat, or nearly so; capsule 4-5 mm. long.

4. Leaves <2 cm. long, linear, obtuse (shrub 1-2 ft., on sandy tracts of N.W. Mallee):

*L. linifolia* Schlechtendal in *Linnaea* 20: 605 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 973 (1957).

*Vern.*: Flax-leaf Logania. *Distr.*: BCDG—also S.A., N.S.W.

—Leaves mostly 2-5 cm. long, usually lanceolate, mostly acute, often revolute at margins, the branches  $\pm$  angled (widespread shrub of E. & N.E. highlands, with disjunct occurrence in Whipstick Scrub north of Bendigo):

*L. albiflora* (Andr.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 633 (1917).

*Euosma albiflora* Andr. *Bot. Repos.* 8: t. 520 (1808);

*L. floribunda* R. Br. *Prodr. Flor. Nov. Holl.* 456 (1810).

*Illust.*: Andrews (l.c.); Mort in Sulman, *Wild Flowers N.S.W.* 2: t. 46 (1914), as *L. floribunda*; Solereder in Engler, *Natürl. PflFam.* IV 2: 30 fig. 15 A (1892), as *L. floribunda*.

*Vern.*: Narrow-leaf Logania. *Distr.*: MRSTVWZ—also N.S.W., Qd.

[Ewart, *Flor. Vict.* 945 (1931), admitted *L. vaginalis* (Labill.) F. Muell. as "confined to N.W. Victoria at Murrayville, and rare". No specimen from this State is present in Melbourne Herbarium, and the writer has not been able to examine the collection (Sept. 1917) on which Ewart's record was founded—it may have been the result of misidentification. *L. vaginalis* is not infrequent in South and Western Australia, but does not seem to occur E. of the Mt. Lofty Range; it is a glabrous shrub to 6 ft. high, with ovate-lanceolate acuminate leaves 1-4" long.

The S. African *Chilanthus dysophyllus* (Benth.) A.D.C. is a tall, scrambling, grey-pubescent shrub with coarsely toothed oval leaves (2-5" long) and loose panicles of minute creamy flowers; it has been recorded as an occasional garden escape in the Melbourne area. Several tall species of *Buddleia* are widely cultivated, sucker readily and tend to persist about old gardens, notably: Chinese *B. davidii* Franch. (purple-flowered), S. African *B. salviifolia* Lam. (lavender-hued), Madagascar *B. madagascariensis* Lam. (pale yellow) and S. American *B. globosa* Hope (orange globular heads). Some authorities assign *Buddleia* to a distinct family *Buddleiaceæ*.]

### Family GENTIANACEÆ

1. Sepals 4, united to above the middle, with short tooth-like lobes; ovary 1-locular; stigma  $\pm$  peltate (small yellow-flowered annuals <3" tall, with leaves <6 mm. long) \**Cicendia* (p. 522)

Sepals commonly 5, united up to the middle or free almost to base, the lobes pointed and conspicuous; stigma bifid; leaves >6 mm. long 2

2. Lower leaves *petiolate*; corolla *broadly campanulate*, white or cream with fine purplish lines, the broad lobes 10 mm. long or more; stigmas *persistent*; ovary 1-locular; anthers versatile, never twisted (montane to alpine, chiefly perennial herb) *Gentianella* (p. 524)

Leaves all *sessile*; corolla *narrowly funnel-shaped*, not noticeably lined, the lobes <8 mm. long; stigmas (with style) *deciduous* 3

3. Ovary 2-locular, the capsule enclosed by calyx; sepals *free* nearly to base; corolla yellow or white; anthers *never* twisting

*Sebæa* (p. 522)

Ovary 1-locular, the capsule as long as or exceeding calyx; sepals  $\pm$  united below; corolla often rosy-pink; anthers *spirally twisting* after anthesis *Centaurium* (p. 523)

\*CICENDIA Adans. (1762-63)

Leaves *linear-lanceolate*; calyx 3 mm. long, *ovoid*, not or only faintly ribbed:

- \**C. filiformis* (L.) Delarbre *Flor. Auv. 1*: 20 (1795).

*Gentiana filiformis* L. *Spec. Plant. 1*: 231 (1753);

*Microcala filiformis* (L.) Hoffmannsegg & Link *Flor. portug. 1*: 359 (1809).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 979 (1957); Ross-Craig, *Drawings Brit. Plants 20*: t. 25 (1964); Butcher, *New ill. Brit. Flor. 2*: fig. 954 (1961); Hegi, *Ill. Flor. Mittel-Eur. 5*\*: fig. 2943 (1927), as *Microcala filiformis*; Poinson in Bonnier, *Flor. compl. Franc., Suisse & Belg. 7*: fig. 1908, col. (1924).

*Vern.*: Slender Cicendia. *Distr.*: CDJMNPSV—also S.A., Tas.

Leaves *ovate*; calyx 4 mm. long, *quadrangular*, broader and  $\pm$  truncate at top, with 4 prominent ribs and 4 finer intervening ones:

- \**C. quadrangularis* (Domb. ex Lam.) Griseb. *Gen. Spec. Gentian. 157* (1839).

*Gentiana quadrangularis* Domb. ex Lam. in *Encycl. méth. Bot. 2*: 645 (1788);

*Microcala quadrangularis* (Domb. ex Lam.) A. DC. *Prodr. 9*: 63 (1845).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 980 (1957); Abrams, *Ill. Flor. Pacific States 3*: fig. 3787 (1951), as *Microcala quadrangularis*; Arechavaleta, *Flor. Uruguay 4* (*An. Mus. nac. Montevideo 7*): 142, 147 (1911), as *M. quadrangularis*; Burridge, *Flor. Aust. Cap. Terr.* fig. 301 (1970).

*Vern.*: Square Cicendia. *Distr.*: AHJMNPRSW—also S.A., N.S.W., A.C.T.

SEBÆA Soland. ex R. Br. (1810)

Flowers 5-partite, in loose irregular cymes; corolla yellow, slightly exceeding calyx; sepals *acute* (widespread annual to 12" high or more):

*S. ovata* (Labill.) R. Br. *Prodr. Flor. Nov. Holl.* 452 (1810).

*Exacum ovatum* Labill. *Nov. Holl. Plant. Specim.* 1: 38, t. 52 (1805).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 976 (1957); Burbidge, *Flor. Aust. Cap. Terr.* fig. 302 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 688 (1971).

*Vern.*: Yellow Sebæa. *Distr.*: BCDEHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Flowers 4-partite, in *compact* cymes; corolla *white* or creamy, hardly exceeding calyx; sepals *blunt* (somewhat fleshy, salt-loving annual <5" high, in southern districts and chiefly near-coastal):

*S. albidiflora* F. Muell. in *Trans. phil. Soc. Vict.* 1: 46 (1855).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 96 (1886); Mueller, *Plants indig. Colon. Vict.* t. 61 (1864-65).

*Vern.*: White Sebæa. *Distr.*: DEJNPTWX—also S.A., Tas.

### CENTAURIUM Hill. (1756)

1. Flowers *yellow*, few, *long-pedicellate*, solitary or paired at ends of lateral dichotomous branches; 2 stigmatic lobes *as long as style*; capsule *far exceeding* calyx (You Yangs and E. Gippsland—uncommon):

\**C. maritimum* (L.) Fritsch in *Mitt. naturw. Ver. Univ. Wien* 5: 97 (1907).

*Gentiana maritima* L. *Mant. Plant.* 1: 55 (1767).

*Illust.*: Coste, *Flor. Franc.* 2: fig. 2477 (1903); Reichenbach, *Icon. Flor. germ.* 17: t. 1061 fig. VI, col. (1855)—both as *Erythræa maritima*.

*Vern.*: Sea Centaury. *Distr.*: NWZ—also S.A.

—Flowers *pink*, few to very numerous

2. Branches of cyme forming *long, loose, leafy racemes*; calyx 6-8 mm. long, divided about *half way to base*; style bearing a short,  $\pm$  *2-lobed* or only *slightly notched stigma* (W. districts, on damp, often  $\pm$  saline flats):

*C. spicatum* (L.) Fritsch in *Mitt. naturw. Ver. Univ. Wien.* 5: 97 (1907).

*Gentiana spicata* L. *Spec. Plant.* 1: 230 (1753);

*Erythræa spicata* (L.) Pers. *Synops. Plant.* 1: 283 (1805);

*E. australis* R. Br. *Prodr. Flor. Nov. Holl.* 451 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 977 (1957), as *Erythræa australis*; Coste, *Flor. Franc.* 2: fig. 2478 (1903), as *E. spicata*; Reichenbach, *Icon. Flor. germ.* 17: t. 1061 fig. IV, col. (1855), as *E. spicata*.

*Vern.*: Spike Centaury. *Distr.*: ABCDJN—also S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust., N. Cal.

—Branches of cyme *naked up to next cymule*; calyx usually cleft *almost to base*; style bearing 2 quite distinct *separate globoid stigmas* (very wide-spread annuals)



3. Plants with a *rosette of basal leaves*; flowers *clustered*, the lateral branches of cyme *almost sessile*; corolla *pale pink* or even whitish, the tube only slightly exceeding calyx, the lobes  $4.5\text{--}6 \times 2.3$  mm. and  $\pm$  *obovate*; anthers  $\pm 1.5$  mm. long (before twisting), on filaments *not* exceeding the stigmas:

\**C. minus* Garsault *Fig. Plant. Anim. Med.* t. 206 (1764).

*Erythræa centaurium* (L., ut *Gentiana* sp.) Pers. *Synops. Plant.* 1: 283 (1805).

*Illust.*: Garsault (l.c.); Ross-Craig, *Drawings Brit. Plants* 20: t. 27 (1964), as *C. erythræa*; Butcher, *New ill. Brit. Flor.* 2: fig. 949 (1961), as *C. erythræa*; Coste, *Flor. Franc.* 2: fig. 2487 (1903), as *Erythræa centaurium*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1907, col. (1924), as *E. centaurium*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 303 (1970), as *C. erythræa*.

*Vern.*: Common Centaury. *Distr.*: CDEJKNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Plants usually *without* a definite basal rosette; flowers in a *loose* dichasial cyme (sometimes reduced to 1 flower in small plants), the lateral branches *slenderly stalked*; corolla *deep rosy pink*, the tube manifestly exceeding calyx, the lobes  $\pm 4 \times 1.5\text{--}2$  mm. and *elliptical*; anthers  $< 1$  mm. long (only 0.5 mm. when twisted), on filaments that *exceed the stigmas*:

\**C. pulchellum* (Swartz) Druce *Flor. Berkshire* 342 (1898)—ut *Centauryon* sp. *Gentiana pulchella* Swartz in *K. svensk. Vetensk. Akad. Handl.* 1783: 84, t. 3 fig. 8 & 9 (1783).

*Illust.*: Swartz (l.c.); Galbraith, *Wildflowers Vict.* ed. 3: t. 129 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 978 (1957), as *Erythræa centaurium*; Ross-Craig, *Drawings Brit. Plants* 20: t. 30 (1964); Bishop in Galbraith, *Wild Life (Melb.)* 6: 55 (1944), as "Centaury"; Hegi, *Ill. Flor. Mittel-Eur.* 5: fig. 2950 (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1906, col. (1924), as *E. pulchella*.

*Vern.*: Centaury. *Distr.*: ACDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W.

[As in Europe, the pink-flowered representatives of *Centauryon* in Victoria are difficult to categorize and seem to grade from one taxon to another. Hybridism may contribute to this puzzling variability, and further research is needed before the status of Australian populations can be understood.]

#### GENTIANELLA Moench (1794)

*G. diemensis* (Griseb.) J. H. Willis in *Vict. Nat.* 73: 199 (1957).

*Gentiana diemensis* Griseb. *Gen. Spec. Gentian.* 224 (1839).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 515, col. (1968); King & Burns, *Wildflowers Tasm.* 75, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 130 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 981 (1957), as *Gentiana diemensis*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 300 (1970).

*Vern.*: Mountain Gentian. *Distr.*: EJKNRSVWZ—also S.A., Tas., N.S.W., A.C.T.

## Family MENYANTHACEÆ

Flowers *paniculate*, on a stout erect peduncle; ovary with 2 parietal placentas; fruit a capsule, *opening by 4 valves* (leaves radical, often free from water)

*Villarsia* (p. 525)

Flowers long-pedicellate, in *pairs or clusters* at the nodes; ovary with 2-5 placentas; fruit *indehiscent or opening irregularly* (leaves always floating on water)

*Nymphoides* (p. 525)

## NYMPHOIDES Hill (1756)

Corolla *prominently fringed* on the margins and bearded inside at base, the lobes each crested along middle by a *wide fringed membrane*; sepals *acute*; leaves *crenate*, gland-dotted on underside (widespread):

*N. crenata* (F. Muell.) O. Kuntze *Revis. Gen. Plant.* 2: 429 (1891).

*Limnanthemum crenatum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 17 (1855).

*Illust.*: Williamson, *Vict. Nat.* 44: 330 fig. 7 (1928); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 188 (1906)—both as *Limnanthemum crenatum*.

*Vern.*: Wavy Marshwort. *Distr.*: ACEGKMNW—also W.A., S.A., N.S.W., Qd, N. Terr.

Corolla *slightly fringed* or hairy, *without* any creasing membranes along lobes; sepals *obtus*e; leaves *entire* or nearly so, often purplish underneath but *without dots* (highlands of far E. & N.E.):

*N. geminata* (R. Br.) O. Kuntze *Revis. Gen. Plant.* 2: 429 (1891).

*Villarsia geminata* R. Br. *Prodr. Flor. Nov. Holl.* 457 (1810);

*Limnanthemum geminatum* (R. Br.) Griseb. *Gen. Spec. Gentian.* 346 (1839).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 983 (1957); Williamson, *Vict. Nat.* 44: 330 fig. 6 (1928)—both as *Limnanthemum geminatum*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 304 (1970).

*Vern.*: Entire Marshwort. *Distr.*: SVWZ—also S.A. (Kangaroo Id), N.S.W., A.C.T., Qd, N. Terr.

## VILLARSIA Vent. (1803)

[Key characters have been adapted from those by Miss H. I. Aston in her revision of Australian taxa of *Villarsia*, in *Muelleria* 2<sup>1</sup>: 3-63 (1969).]

1. Leaf-blades ovate-elliptic to broadly ovate, usually much *longer than broad*, rounded at base or only shallowly cordate,  $\pm$  *isobilateral*, dull on both surfaces; flowers *heterostylous*; capsule adnate to calyx-tube for the lower third to half; seeds large (averaging 1.7-2.6 mm. long), sparsely to densely *tuberculate*, with *conspicuous caruncle* (near-coastal heathland swamps, from Port Phillip Bay to N.S.W. border):

*V. exaltata* (Soland. ex Sims) G. Don *Gen. Syst.* 4: 169 (1838).

*Menyanthes exaltata* Soland. ex Sims in *Curtis's bot. Mag.* 26: sub t. 1029 (1807)—*icone excluso*.

*Illust.*: Aston, *Muelleria* 2<sup>1</sup>: 6 fig. 2 & 3 a, 7 fig. 4 e (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 131 (1967).

*Vern.*: Erect Marsh-flower. *Distr.*: PTWZ—also Tas., N.S.W., Qd.

—Leaf-blades ovate to reniform, mostly about *as long as broad*, slightly to deeply *cordate at base*, often markedly *dorsiventral* and frequently glossy above; flowers *homostylous*; capsule adnate to calyx-tube only *at very base*; seeds relatively *small* (averaging 1.1–1.5 mm. long), *smooth to slightly granular* (but tuberculate in *V. umbricola* var. *beaugleholei*), *without* a conspicuous caruncle 2

2. Plant *stoloniferous* when in water; culms *erect and self-supporting*; inflorescence chiefly *terminal*; flower-span 19–43 (average 32.3) mm.; pedicels of mature capsules *erect* (widespread in swamps of W. & S., from South Aust. border eastward to Bairnsdale district):

*V. reniformis* R. Br. *Prodr. Flor. Nov. Holl.* 457 (1810).

*V. exaltata* sens. Ewart *Flor. Vict.* 950 (1931) *pro major. part.*

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 257, col. (1968); Aston, *Muelleria* 2<sup>1</sup>: 6 fig. 2 & 3 b, 7 fig. 4 a (1969); Edwards in *Curtis's bot. Mag.* 32: t. 1328, col. (1810), as *Menyanthes sarmentosa*; Meredith, *Bush Friends Tasm.* last ser.: t. 8 opp. 39, col. (1891), as *V. parnassiaefolia*; Black, *Flor. S. Aust.* ed. 2: fig. 982 (1957), as *V. exaltata*.

*Vern.*: Running Marsh-flower. *Distr.*: CDEJKNPTWXZ—also S.A., Tas., N.S.W.

—Plant *never stoloniferous*; culms weak, slender, *semi-erect or reclining against supports*; inflorescence lax, *spreading laterally* from much of culm; flower-span 11–31 (average 21.7) mm.; pedicels of mature capsules *recurved* (shaded damp or wet situations from far S.W. to vicinity of Grampians):

*V. umbricola* H. I. Aston in *Muelleria* 2<sup>1</sup>: 53 (1969).

*Illust.*: Aston, *l.c.*: 6 fig. 2 & 3 c, 7 fig. 4 b–c, 63 t. 2 (1969).

*Vern.*: Lax Marsh-flower. *Distr.*: CDE—also S.A.

[With the exception of a population at Bridgewater Lakes,  $\pm$  11 miles west of Portland, all known Victorian occurrences are referable to the var. *beaugleholei* H. I. Aston in *Muelleria* 2<sup>1</sup>: 55 (1969), differing from var. *umbricola* in their *strongly and densely tuberculate* (not glabrescent) seeds.]

### Family APOCYNACEÆ

1. Flowers showy, *blue or rosy-purple* (rarely white), 3 cm. wide or more, *solitary* in leaf-axils (garden escapes, either trailing herbs or erect semi-shrubs with narrow follicles). 3  
Flowers *white or yellowish*, small (<2 cm. wide), in *cymes* or axillary cymose clusters (shrubs or woody climbers) 2

2. Leaves *tough and leathery, broadly elliptic to  $\pm$  orbicular*, <4 cm. long; corolla-lobes *white, twisted to one side*, the tube yellow; fruit of 1 or 2 (then superposed) *red to orange drupes* 7-10 mm. diam. (rigid coastal shrub to 6 ft. high) *Alyxia* (p. 527)

Leaves  $\pm$  *membranous and lax, lanceolate*, 5-10 cm. long or more; corolla-lobes *greenish-yellow, not twisted*; fruit of 2 thin, divergent, *many-seeded follicles* 5-8 cm. long (tall forest climber of eastern highlands and Otways) *Parsonsia* (p. 527)

3. Stems *trailing and rooting*; leaves *broadly ovate, glossy*; flowers *pale blue*; stigma *crowned by a hair-tuft*; seeds *very few* (1-4) per follicle, long and narrow *\*Vinca* (p. 527)

Stems *erect, shrubby*; leaves *oblong, prominently veined*; flowers *rosy-purple or white*; stigma *glabrous*; seeds *numerous, broadly ellipsoid* *\*Lochnera* (p. 527)

### ALYXIA Banks ex R. Br. (1810)

*A. buxifolia* R. Br. *Prodr. Flor. Nov. Holl.* 470 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 276, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 132 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 985 (1957); Ewart, *Flor. Vict.* fig. 319 (1931); Reeves, *Wild Life (Melb.)* 6: 276 (1944); Gardner, *Wildflowers W. Aust.* 126, col. (1959).

*Vern.*: Sea-box. *Distr.*: EKPTWZ—also W.A., S.A., Tas., N.S.W.

### PARSONSIA R. Br. (1809)

*P. brownii* (J. Britt.) Pichon in *Notul. syst., Paris* 14: 10 (1950).

*Lyonsia brownii* J. Britt. in *J. Bot., Lond.* 45: 236 (1907);

*L. straminea* sens. Ewart *Flor. Vict.* 953 (1931), *non strict.* R. Br. (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 448, col. (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 101 (1886), as *Lyonsia straminea*; Mueller, *Plants indig. Colon. Vict.* t. 58 (1864-65), as *L. straminea*.

*Vern.*: Twining Silkpod. *Distr.*: KNRSTVWZ—also Tas., N.S.W., Qd.

### \*VINCA L. (1753)

\**V. major* L. *Spec. Plant.* 1: 209 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 986 (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 3825 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3030 & 3031 (1927); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1896 b, col. (1924); Coste, *Flor. Franc.* 2: fig. 2471 (1903).

*Vern.*: Blue Periwinkle. *Distr.*: JKMNPTUW—also S.A., Tas., N.S.W., N.Z.

[In his *Flor. Vict.* 953 (1931) Ewart has recorded *Lochnera rosea* (L.) Reichenb. *Consp. Regn. Veg.* 134 (1828)—under its basionym *Vinca rosea* L.—as “a garden escape . . . fairly frequent in Victoria”. There are no Victorian specimens at Melbourne Herbarium, nor have any spontaneous occurrences of this Old World tropical weed been observed in the State during several decades past.]

## Family ASCLEPIADACEÆ

1. Habit *erect*,  $\pm$  *shrubby*; corolla-lobes strongly *reflexed* at maturity; follicle often bearing *soft pliable spines* (weeds)

\**Asclepias* (p. 528)Habit *climbing or twining*; corolla-lobes *never reflexed*; follicle *without spines* 2

2. Corolla *dark purple*, *rotate*, the lobes  $\pm$  *bearded* inside; follicle narrow 5  
Corolla *white, green or yellowish* 3

3. Stems and leaves  $\pm$  *glaucous*; corolla-tube *campanulate, white*, 10-15 mm. long; pollinia *pendulous*; follicle *pear-shaped*, 5-10 cm. long, wrinkled (occasional, moth-catching garden weed) \**Araujia* (p. 530)

Stems and leaves *always green*; corolla-tube *yellowish*, <5 mm. long; pollinia *erect or horizontal* 4

4. Leaves *oblong to oval*; corolla-tube *shorter* than the spreading lobes; follicle *acuminate*,  $\pm$  5 cm. long, *glabrous* or with few scattered hairs (tall robust twiners of far E. jungles) *Marsdenia* (p. 530)

Leaves *linear*; corolla-tube *urceolate, longer* than lobes; follicle *broad and blunt*, 5-9 cm. long, finely *hoary* all over (slender twiner of N.W. Mallee) *Leichhardtia* (p. 529)

5. Leaves *ovate or elliptic*, 2-5 cm. long, on petioles 5-10 mm. long; corolla-lobes *blunt*,  $\pm$  3 mm. long; follicles 5-7 cm. long (slender twiner, 3-6 ft. long, in E. jungles, also at Waratah Bay)

*Tylophora* (p. 529)Leaves *narrow-linear*, 4-9 cm. long, on petioles <5 mm. long; corolla-lobes *tapering*,  $\pm$  6 mm. long; follicles 8-15 cm. long (rare Mallee twiner, usually >6 ft. long) *Pentatropis* (p. 529)

## \*ASCLEPIAS L. (1753)

1. Corolla *red*; corona *yellow*; follicles *narrow*,  $\pm$  *lanceolate, smooth*; leaves *narrow-elliptic, glabrous* (occasional,  $\pm$  *hoary weed* of irrigation areas near Mildura):

\**A. curassavica* L. *Spec. Plant.* 1: 215 (1753).*Illust.*: Fernandez in Meyer, *Descole Gen. Spec. Plant. Argent.* 2<sup>1</sup>: t. 54, col. (1944); Bailey, *Qd agric. J.* 3: t. 67 opp. 437 (1898); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 184 (1906); *Edwards's bot. Reg.* 1: t. 81, col. (1816).*Vern.*: Red-head Cotton-bush. *Distr.*: A—also N.S.W., Qd.—Corolla and corona both *whitish or creamy*; follicles *broad, ovoid, bearing soft spines* 2

2. Leaves *linear-lanceolate*, not leathery *nor* strongly veined, 2-4" long; branches *slender, finely and minutely pubescent*; umbels 3- to 10-flowered; corona-lobes each with 2-*incurved teeth* on inner edge; fruit covered with *numerous soft prickles* (slender widespread shrub with aromatic roots):

\**A. fruticosa* L. *Spec. Plant.* 1: 216 (1753).

*Gomphocarpus fruticosus* (L.) R. Br. in *Mem. Werner. nat. Hist. Soc.* 1: 38 (1809).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 992 (1957); Mercer in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 89 (1958); Mercer in Hurst, *Poison Plants N.S.W.* 327 (1942); Wall in Clarke, *Bull. Dep. Agric. S. Aust.* n. 406: 49 (1949); Coleman, *Vict. Nat.* 54: 15, 18, t. 3 (1937); *Curtis's bot. Mag.* 39: t. 1628, col. (1814); Bailey, *Qd agric. J. new ser.* 6: 105 (1916)—last two as *Gomphocarpus fruticosus*.

*Vern.*: Swan Plant (Narrow-leaf Cotton-bush; Arghel of Syria). *Distr.*: GJMN—also W.A., S.A., N.S.W.

—Leaves *ovate-oblong, leathery, boldly reticulate-veined*, 1-2" long; branches *stout, coarsely pubescent*; umbels 10- to 20-flowered; corolla often  $\pm$  purplish outside; corona-lobes *without teeth*; fruit with *few scattered prickles* (occasional weed at Phillip Id, also Hopetoun & Murrayville districts in Mallee):

\**A. rotundifolia* Mill. *Gdnrs Dict.* ed. 8; n. 15 (1768).

*Gomphocarpus arborescens* (L., ut *Asclepias* sp.) R. Br. in *Mem. Werner. nat. Hist. Soc.* 1: 38 (1809).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 991 (1957); Wall in Clarke, *Bull. Dep. Agric. S. Aust.* n. 406: t. opp. 45, col. (1949).

*Vern.*: Broad-leaf Cotton-bush. *Distr.*: BP—also S.A.

#### PENTATROPIS Wight & Arnott (1834)

*P. quinquepartita* (F. Muell.) Benth. *Flor. aust.* 4: 329 (1868).

*Rhyncharrhena quinquepartita* F. Muell. *Fragm. Phyt. Aust.* 1: 128 (1859).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 102 (1886), as *Dæmia quinquepartita*; Mueller, *Plants indig. Colon. Vict.* t. 59 (1864-65), as *Rhyncharrhena quinquepartita*.

*Vern.*: Purple Pentatrobe. *Distr.*: AFG—also N.S.W., N. Terr.

#### TYLOPHORA R. Br. (1809)

*T. barbata* R. Br. *Prodr. Flor. Nov. Holl.* 460 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 470, col. (1968).

*Vern.*: Bearded Tylophora. *Distr.*: TWZ—also N.S.W.

#### LEICHHARDTIA R. Br. (1849)

*L. australis* R. Br. in Sturt *Narr. Exped. Cent. Aust.* App. 81 (1849).

*Marsdenia australis* (R. Br.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 634 (1917).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 152, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 987 1-k & 993 (1957), as *Marsdenia australis*; Myers in Turner, *Forage Plants Aust.* t. opp. 39 (1891), as *M. leichhardtiana*; Kraehenbuehl, *Vict. Nat.* 88: 229 t. 4 (1971).  
*Vern.*: Austral Doubah. *Distr.*: ACFG—also W.A., S.A., Cent. Aust.

### MARSDENIA R. Br. (1809)

Leaves *broadly oblong* to ovate, often >3" long; branches *glabrous* or nearly so; flowers in *simple umbels*, *whitish*, fragrant; sepals  $\pm$  2 mm. long; corolla-lobes shortly *hairy inside* near base; corona-lobes at least *as long as* stamens; stigma *beaked*; follicle *broad*:

*M. rostrata* R. Br. in *Mem. Werner. nat. Hist. Soc.* 1: 31 (1809).

*Vern.*: Milk-vine. *Distr.*: SWZ—also N.S.W., Qd.

Leaves *oblong-lanceolate*, 2-3" long; branches shortly *tomentose*; flowers in *compound cymes*, *yellowish*; sepals  $\pm$  1 mm. long, obtuse; corolla-lobes *glabrous inside*; corona lobes *shorter than* stamens; stigma short, *obtuse*; follicle *narrow*, tapering:

*M. flavescens* A. Cunn. in *Curtis's bot. Mag.* 60: t. 3289, col. (1833).

*Illust.*: Hooker in Cunningham (*l.c.*)—

*Vern.*: Yellow Milk-vine. *Distr.*: W (Bairnsdale to Orbost)—also N.S.W., Qd.

### \*ARAUJIA Brot. (1818)

\**A. hortorum* Fournier in *Mart. Flor. brasil.* 6<sup>4</sup>: 293, t. 84 (1885).

*Illust.*: Fournier (*l.c.*); Coleman, *Vict. Nat.* 52: 4, 6, 7 (1935), as *A. sericofera*; Mercer in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 90 (1958), as *Arujia hortorum*, also in *Agric. Gaz. N.S.W.* 73: 137 (March 1962).

*Vern.*: White Bladder-flower (Cruel Plant). *Distr.*: Sporadic—also N.S.W.

### Family BORAGINACEÆ

1. Style inserted *deeply between* the 4 distinct lobes of ovary 3  
    Style quite *terminal* on the undivided or slightly lobed ovary 2
2. Flowers *blue*; anthers *exserted*, dark, with terminal appendages, *united*  
    in a narrow conical tube around the *long filiform style*; stigma simple,  
    *minute* (small shrubs of mallee scrub in N.W.) *Halgania* (p. 532)  
    Flowers *white*; anthers *enclosed, free*; style *very short*, with thick conical  
    stigma (herbs, chiefly northern) *Heliotropium* (p. 532)
3. Corolla *regular*, rotate, with straight tube 5  
    Corolla zygomorphic and obliquely limbed or with curved tube, blue or  
    purplish 4

4. Flowers *numerous*, relatively large, with *straight* corolla-tube but *without scales* in throat; stamens *exserted*, with long filaments; stigma *bilobed* 7  
*\*Echium* (p. 536)
- Flowers *few*, small, with *curved* corolla-tube and *5 scales* in throat; stamens *enclosed*; stigma *entire* 6  
*\*Lycopsis* (p. 536)
5. Fruitlets rough or smooth, but *not* prickly 7  
 Fruitlets *burr-like*, beset with barbed prickles 6
6. Fruitlets rather *soft*, *convex* or *flattish* on outer face, attached laterally *along their whole length*, the tips hardly free and prickles *numerous* (widespread perennials) 6  
*Cynoglossum* (p. 533)
- Fruitlets *hard*,  $\pm$  *triangular*, with a *tuberculate hollow* at centre of outer face, their tips *free* above point of attachment, the prickles coarse and only 8-10 per nutlet (procumbent annual of N.W.) 9  
*Omphalolappula* (p. 533)
7. Flowers *nodding*, relatively large (12 mm. long or more), blue or mauve (garden escapes) 14  
 Flowers upright or spreading from branches of cyme 8
8. Receptacle almost *flat*, the fruitlets attached *basally* 10  
 Receptacle *conical* or *convex*, at least half as long as the fruitlets which are attached *laterally* 9
9. Cymes *bracteate*; corolla *white*, minute (2-3 mm. long); stigma *capitate* (small *procumbent* or *prostrate* annuals of N.W. & S.W.) 9  
*Plagiobothrys* (p. 534)
- Cymes *bractless*; corolla *yellow*, >4 mm. long; stigma  $\pm$  *bilobed* (*erect* bristly annuals,  $\pm$  1 ft. high or more) 13  
*\*Amsinckia* (p. 535)
10. Corolla-scales *absent* or much reduced and inconspicuous; flowers *white* or *pale yellow*; fruits  $\pm$  *tuberculate* 11  
 Corolla-scales *conspicuous* in throat, sometimes almost closing the aperture; flowers often *blue* 12
11. Floral bracts *absent*; fruitlets *smooth*, attached by a very small basal areole; corolla-scales *smooth* 11  
*Myosotis* (p. 537)
- Floral bracts *present*; fruits *wrinkled* or *reticulate*; corolla-scales *papillose* 12
12. Flowers *sessile*; fruitlets *wrinkled*, with a *swollen ring* at base and attached by a *broad* concave areole (Port Fairy and Red Cliffs districts) 11  
*\*Anchusa* (p. 537)
- Flowers on *slender pedicels*; fruitlets *reticulate*, attached by a *small* concave base 12  
*\*Pentaglottis* (p. 539)
13. Sepals *free* almost to base; corolla *white*; fruitlets *erect*,  $\pm$  *beaked* 12  
*\*Lithospermum* (p. 538)
- Sepals *united*, at least up to middle; corolla *yellow*; fruitlets *curved outwards*, hardly beaked (Geelong-Meredith region) 11  
*\*Nonea* (p. 537)
14. Corolla-tube *long*, bell-shaped, with very *short*  $\pm$  *recurved lobes*, the scales at throat and stamens *not exserted* (perennial) 11  
*\*Symphytum* (p. 539)
- Corolla-tube very *short*, with *long-pointed straight lobes*, the scales and stamens prominently *exserted* (annual) 12  
*\*Borago* (p. 539)



## HALGANIA Gaudich. (1829)

[In *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 394 (1959), J. Hutchinson assigned this genus to the derivative family *Ehretiaceæ* (of woody plants).]

Leaves *green on both sides, scabrid*, oblanceolate to linear-cuneate, obtuse to truncate at apex, with 3 short *apical teeth* and sometimes a few marginal teeth (rarely entire), mostly 5-20 mm. long; hairs *forked*; calyx-lobes  $\pm$  *equal*; corolla <10 mm. wide:

**H. cyanea** Lindl. in *Edwards's bot. Reg.* 23: Swan Riv. App. xl. (1839).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1007 A (1957).

*Vern.*: Rough Halganian. *Distr.*: ABCFG—also W.A., S.A., N.S.W., N. Terr., Cent. Aust.

Leaves *white-woolly on under-sides*, often *viscid*, narrowly oblong to lanceolate, with recurved margins, *entire*, 10-30 mm. long; hairs *simple*; calyx lobes *unequal* (the 2 outer larger and broader than 3 inner, linear lobes); corolla 10-15 mm. wide:

**H. lavandulacea** Endl. in *Ann. Wien Mus. Naturg.* 2: 205 (1840).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 158, col. (1968); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 5 n. 298 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1008 (1957); Mueller, *Key Syst. Vict. Plants* fig. 106 (1886).

*Vern.*: Lavender Halganian. *Distr.*: ABCFG—also W.A., S.A., N.S.W.

## HELIOTROPIUM L. (1753)

1. Plant *glabrous*,  $\pm$  *glaucous* and *succulent*, *prostrate*, *perennial*, drying black; leaves 6-20 mm. long, obovate-oblanceolate; cymes short; calyx  $\pm$  2 mm. long, with minute obtuse lobes; stigma *sessile*, as broad and long as ovary (N.W., chiefly on saline flats):

**H. curassavicum** L. *Spec. Plant.* 1: 130 (1753).

*Illust.*: Curtis's bot. Mag. 53: t. 2669, col. (1826); Reinholdt in Mason, *Flor. Marshes Calif.* fig. 297 (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 4167 (1951); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2010, col. (1926); Coste, *Flor. Franc.* 2: fig. 2615 (1903).

*Vern.*: Smooth Heliotrope. *Distr.*: ABCG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Plant  $\pm$  *hairy*, *not succulent*, chiefly *annual*; calyx mostly 3 mm. long or more; stigma on a *distinct* but sometimes very short style 2

2. Stems  $\pm$  *prostrate*, *white-tomentose*; calyx tomentose,  $\pm$  3 mm. long, shortly *5-toothed*, *deciduous*; style equalling stigmatic cone; fruitlets almost *smooth*, *falling enclosed* in calyx-tube:

**\*H. supinum** L. *Spec. Plant.* 1: 130 (1753).

*Illust.*: Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2012, col. (1926); Coste, *Flor. Franc.* 2: fig. 2616 (1903); Reichenbach, *Icon. Flor. germ.*

18: t. 1294 fig. I, col. (1857); Wight, *Icon. Plant. Ind. orient.* 4: t. 1387 (1848).  
*Vern.*: Creeping Heliotrope. *Distr.*: ACDFH—also S.A., N.S.W.

—Stems *erect*, pubescent or bristly but *not* tomentose; calyx 3-4 mm. long, the sepals *free* almost to base and *persisting*; fruitlets *rugose*, *free* from calyx 3:

3. Leaf-blades *ovate*, narrowed (often abruptly) into a *longish petiole*, the surfaces *plane* and pubescent or scabrid with short hairs; flowers <5 mm. wide, *scentless*, in *elongating cymes*; style minute, *much shorter* than stigmatic cone:

\**H. europæum* L. *Spec. Plant.* 1: 130 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 102, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1009 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 28, col. (1958); Gardner in Walker, *Agric. Gaz. N.S.W.* 77: 11 (1966); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 220 fig. 1, col. (1927); Poinsoy in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2011, col. (1926); Coste, *Flor. Franc.* 2: fig. 2617 (1903).

*Vern.*: Common Heliotrope. *Distr.*: ABCFGHJLNPR—also W.A., S.A., N.S.W.

—Leaf-blades *oblong-lanceolate*, tapering into a *very short petiole*, the surfaces *wrinkled* and *bristly* from the longish, tubercle-based hairs; flowers  $\pm$  5 mm. wide, *delightfully fragrant*, in *short head-like cymes*; style finally longer than stigmatic cone:

*H. asperillum* R. Br. *Prodr. Flor. Nov. Holl.* 493 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1011 (1957).

*Vern.*: Rough Heliotrope. *Distr.*: CF—also W.A., S.A., N.S.W., Qd, Cent. Aust.

#### OMPHALOLAPPULA Brand (1931)

*O. concava* (F. Muell.) Brand in *Pflanzenreich IV* 252 (Heft. 97): 135 (1931).  
*Echinosperrum concavum* F. Muell. *Fragm. Phyt. Aust.* 2: 139 (1861);

*Lappula concava* (F. Muell.) F. Muell. *Syst. Cens. aust. Plants* 100 (1882).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1007 K-L & 1016 (1957).

*Vern.*: Burr Stickseed. *Distr.*: ABCFGV—also S.A., N.S.W., Cent. Aust.

#### CYNOGLOSSUM L. (1753)

1. Leaves broadly *ovate*, conspicuously petiolate (except the uppermost), to 2" long, *thinnish* in texture, *plane*; flowers small, few, axillary or in loose bracteate cymes; pedicels 15-25 mm. long, *not* recurved in fruit; mature fruitlets  $\pm$  3 mm. long (*weak plant*, straggling to several feet in moister shaded forests):

**C. latifolium** R. Br. *Prodr. Flor. Nov. Holl.* 495 (1810).

*Illust.*: Brand, *Pflanzenreich* IV 252 (Heft 78): 145 fig. 20 (1921).

*Vern.*: Forest Hound's-tongue. *Distr.*: EKNPTWZ—also Tas., N.S.W., Qd.

—Leaves *elliptic to narrow-lanceolate*, 2-4" long, rigid, often  $\pm$  *undulate* on margins; pedicels mostly <15 mm. long, *recurved* in fruit; mature fruitlets 4-5 mm. long (*erect plants* to 3 ft., *widespread*) 2

2. Cymes *leafy*, often few-flowered; flowers very *strongly scented*, *white or cream*, with yellow scales at throat; fruitlets *ovoid*, *densely and equally prickly* over outer convex face, quite *wingless* (plants rarely >1 ft. high):

**C. suaveolens** R. Br. *Prodr. Flor. Nov. Holl.* 495 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 230, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 134 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1015 (1957); Ewart, *Flor. Vict.* fig. 321 (1931); Bishop, *Wild Life (Melb.)* 4: 330 (1942); Burbidge, *Flor. Aust. Cap. Terr.* fig. 308 (1970).

*Vern.*: Sweet Hound's-tongue. *Distr.*: ABCDEHJKMNPRSTVW—also S.A., Tas., N.S.W., A.C.T., Qd.

—Cymes *leafless*, many-flowered; flowers only *slightly scented*, mostly *light blue* (occasionally white or pinkish); fruitlets *much flattened*, minutely prickly on centre of outer face which is edged with a *concave coarsely serrate wing* (plants 1-3 ft. tall):

**C. australe** R. Br. *Prodr. Flor. Nov. Holl.* 495 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1007 G-J (1957).

*Vern.*: Australian Hound's-tongue. *Distr.*: ABCDEJKMNPRSTVW—also W.A., S.A., Tas., N.S.W., A.C.T., Cent. Aust.

#### PLAGIOBOTHRYS Fisch. & C. Mey. (1835)

1. Leaves *oblanceolate*, the lower >3 cm. long and up to 1 cm. wide; cymes *lax*, *elongated*, >15 cm. long, with lower flowers very distant; calyx beset with *dense yellow hairs*, *accrescent* in fruit; fruitlets *white*, *dull*, *long-pointed*, puckered and  $\pm$  *hollowed* on ventral face (occasional weed in Yarrowonga district):

**\*P. canescens** Benth. *Plant. Hartweg.* 326 (1849).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4260 (1951).

*Vern.*: Valley Popcorn Flower. *Distr.*: R—also N.S.W.

—Leaves *linear*, 1-2 cm. long, <3 mm. wide; cymes <15 cm. long; calyx *white-hairy*, *not* noticeably *accrescent*; fruitlets *pearly-grey*, *glossy*, *short-pointed*, *acutely keeled* on ventral face 2

2. Fruiting sepals 5, *subequal*, *linear*, *straight*, herbaceous, 2-4 mm. long; fruitlets 4, *exposed early*,  $\pm$  1.5 mm. long; areole *small*, *oblique*:

*P. elachanthus* (F. Muell.) I. M. Johnston in *Contr. Gray Herb. Harv.* 81: 78 (1928).

*Heliotropium elachanthum* F. Muell. in *Linnæa* 25: 424 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1018 (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 10 n. 302 (1965).

*Vern.*: Hairy Forget-me-not. *Distr.*: ABCEFJHJMPR—also W.A., S.A., N.S.W.

—Fruiting sepals 5-9, *unequal, filiform, much curved*, indurated, 5-7 mm. long; fruitlets 2 (rarely 4), *embedded in calyx-base*,  $\pm$  2 mm. long; areole *elongated*, extending  $\pm$  half-way up ventral face:

*P. plurisepalus* (F. Muell.) I. M. Johnston in *Contr. Gray Herb. Harv.* 81: 75 (1928).

*Maccoya plurisepalea* F. Muell. *Fragm. Phyt. Aust.* 1: 127 (1859).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 103, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1017 (1957).

*Vern.*: White Rochelia. *Distr.*: ABHM—also S.A., N.S.W.

#### \*AMSINCKIA Lehm. (1831)

[Key adapted from one prepared for publication by D. Connor, 1966.]

1. Corolla-throat *constricted and closed* (or nearly so) by intruding *hairy saccate processes*; stamens inserted evenly, *low in corolla-tube* above a constriction; corolla light yellow, 5-8 mm. long; fruitlets 2-3 mm. long (Wimmera & S. Mallee):

\**A. lycopsoides* Lehm. *Del. Semin. Hort. Hamb.* 7 (1831).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4337 (1951).

*Vern.*: Bugloss Fiddle-neck. *Distr.*: BCHJR.

—Corolla-throat *open and glabrous*; stamens  $\pm$  regularly inserted in the throat

2. Corolla *pale yellow*, 5-10 mm. long, 2-4 mm. broad, usually exerted from calyx by only 1-2 mm.; stems *hispid* as well as strigulose; fruitlets 2-2.5 mm. long (chiefly Wimmera, S. Mallee & E. Gippsland):

\**A. hispida* (Ruiz & Pav.) I. M. Johnston in *Contr. Gray Herb. Harv.* 73: 75 (1924).

*Lithospermum hispidum* Ruiz & Pav. *Flor. Peruv. et Chil.* 2: 5 (1799).

*Illust.*: Carn, *Control of Weeds, N.S.W.* 38 (1939); Black, *Flor. S. Aust.* ed. 2: fig. 1021 (1957).

*Vern.*: Hairy Fiddle-neck. *Distr.*: BCJLMNSV—also S.A., Tas., N.S.W., Cent. Aust.

—Corolla *orange to orange-yellow*, 10-15 long, 8-10 mm. broad, *conspicuously exerted* beyond calyx; stems *strigulose only*, often almost glabrous; fruitlets 3-3.5 mm. long (chiefly Ballarat district, scattered elsewhere):

\**A. intermedia* Fisch. & C. Mey. *Index Semin. Petrop.* 2: 26 (1835).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4334 (1951); Clements, *Natn. geogr. Mag.* 51: t. 13 fig. 1, col. (1927).

*Vern.*: Common Fiddle-neck. *Distr.*: HJMN—also N.S.W.

[The description under the name "*A. angustifolia* Lehm." in Ewart's *Flor. Vict.* 970 (1931) probably applies partly to *A. hispida* and partly to *A. intermedia*.]

### \*ECHIUM L. (1753)

*Cymes elongated*; corolla 2-3 cm. long, its tube *dilated upwards*; only the 2 *posterior stamens long-exserted*; sepals 8-10 mm. long (widespread weed, chiefly in northern districts):

\**E. lycopsis* L. *Flora anglica* 12 (1754).

*E. plantagineum* L. *Mant. Plant.* 2: 202 (1771).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 27, col. (1958); Gardner in Meadly, *Weeds W. Aust.* 120 col., 122 (1965); Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 5: t. opp. 549 col., 550 (1956); Orchard, *J. Dep. Agric. S. Aust.* 51: 485, 487 (1948)—all the preceding as *E. plantagineum*; Butcher, *New ill. Brit. Flor.* 2: fig. 995 (1961); Wauer in Ewart, *Weeds . . . Vict.* t. opp. 50, col. (1909), as *E. violaceum*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1979, col. (1924), as *E. plantagineum*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 311 (1970); Everard, *Wild Flowers World* t. 37 fig. E, col. (1970).

*Vern.*: Paterson's Curse (Salvation Jane). *Distr.*: ABCFGJMNPRUVW—also S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

*Cymes short and dense*; corolla <2 cm. long (often <1.5 cm.), the tube *relatively slender*; 4 *stamens exserted*, the fifth enclosed; sepals  $\pm$  5 mm. long (Mornington Peninsula):

\**E. vulgare* L. *Spec. Plant.* 1: 139 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 21 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 994 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 222 fig. 4, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 1984, col. (1926); Coste, *Flor. Franc.* 2: fig. 2581 (1903); Everard, *Wild Flowers World* t. 20 fig. F, col. (1970).

*Vern.*: Viper's Bugloss. *Distr.*: P—also Tas., N.S.W., N.Z.

[*E. italicum* L. has been found in N.S.W., between Corowa and Albury; it may also be spontaneous on the Victorian side of the Murray R. This weed resembles *E. vulgare*, but is more densely setose (with coarse yellowish bristles 2-3 mm. long) and 5 much more exserted stamens.]

### \*LYCOPSIS L. (1753)

\**L. arvensis* L. *Spec. Plant.* 1: 139 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 6 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 978 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 220 fig. 3, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1965, col. (1924); Abrams, *Ill. Flor. Pacific States* 3: fig. 4180 (1951).

*Vern.*: Bugloss. *Distr.*: EHMPTW—also S.A., N.S.W.

## \*NONEA Med. (1789)

\**N. lutea* (Desr.) Reichenb. ex A. DC. *Prodr.* 10: 28 (1846).

*Lycopsis lutea* Desr. in Lam. *Encycl. méth. Bot.* 3: 657 (1791-92);

*Alkanna lutea* (Desr.) DC. ex A. DC. *Prodr.* 10: 102 (1846).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3148 & 3149 (1927); Reichenbach, *Icon. Flor. germ.* 18: t. 1302 fig. II, col. (1857); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1967, col. (1924), as *Alkanna lutea*; Coste, *Flor. Franc.* 2: fig. 2562 (1903), as *A. lutea*.

*Vern.*: Yellow Alkanet. *Distr.*: NP (Geelong-Meredith region).

## \*ANCHUSA L. (1753)

\**A. capensis* Thunb. *Prodr. Plant. capens.* 34 (1800).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1025 (1957); Gusuleac in Fedde, *Repert. Spec. nov. Regn. veg.* 26: t. 95 fig. c-F (1929); *Gartenwelt* 34: 648 (1930).

*Vern.*: Cape Forget-me-not. *Distr.*: AE—also S.A.

## MYOSOTIS L. (1753)

1. Stamens *wholly exerted*, 10 mm. long or more; corolla relatively large, white, *fragrant*, the lobes as long as tube ( $\pm$  5 mm.); hairs mostly appressed, except on calyx (highland perennial of rocky places, chiefly in farther N.E.):

*M. suaveolens* (R. Br.) Poir. *Encycl. méth. Bot. Suppl.* 4: 44 (1816).

*Exarrhena suaveolens* R. Br. *Prodr. Flor. Nov. Holl.* 495 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 383, col. (1968).

*Vern.*: Sweet Forget-me-not. *Distr.*: DJKMNRSVWZ—also Tas., N.S.W.

—Stamens *enclosed*; flowers *not* fragrant 2

2. Calyx-tube *longer than* style, bearing *appressed straight hairs*; corolla mostly blue, 2-4 mm. diam. (annual or biennial of stream-banks and wet places):

\**M. cæspitosa* K. F. Schultz *Prodr. Flor. stargard. Suppl.* 1: 11 (1819).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 9 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 984 (1961); Coleman, *Wild Life (Melb.)* 3: 11 (1941), as *M. scorpioides*; Coste, *Flor. Franc.* 2: fig. 2589 (1903); Everard, *Wild Flowers World* t. 20 fig. B, col. (1970), as *M. scorpioides*.

*Vern.*: Water Forget-me-not. *Distr.*: NSTV—also Tas. (King Id), N.S.W., A.C.T., N.Z.

—Calyx-tube *much shorter than* style, with *spreading and often hooked hairs* 3

3. Corolla mostly blue, 6-10 mm. diam.; fruiting pedicels *much longer than* calyx; lower leaves >15 mm. broad; hairs on upper part of flowering axes appressed (garden escape of Greater Melbourne area & Dandenong Ranges, chiefly perennial):

\**M. sylvatica* Hoffm. *Deutschl. Flor.* 61 (1791).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 14 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 986 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4185 (1951); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 1990, col. (1926); Coste, *Flor. Franc.* 2: fig. 2599 (1903).

*Vern.*: Wood Forget-me-not. *Distr.*: N—also Tas.

—Corolla <5 mm. diam.; fruiting pedicels *shorter* than calyx; lower leaves <12 mm. broad (annuals) 4

4. Hairs on upper parts of floral axes and on calyces  $\pm$  *spreading*; calyx 2-3 mm. long; corolla white, yellow or bluish (widespread from sea-level to alps):

*M. australis* R. Br. *Prodr. Flor. Nov. Holl.* 495 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 249, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 483, col. (1967); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1022 (1957).

*Vern.*: Austral Forget-me-not. *Distr.*: ACDEHJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Hairs on upper parts of floral axes quite *appressed*, those on calyx-tube *spreading*; calyx 3-5 mm. long; corolla at first white or yellowish, *then blue* (occasional weed of montane pastures in far N.E.):

\**M. discolor* Pers. in Murr. *Syst. Veg.* ed. 15: 190 (1798)—*in obs.*

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 17 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 988 (1961); Burbidge, *Flor. Aust. Cap. Terr.* fig. 310 (1970).

*Vern.*: Yellow-and-blue Forget-me-not. *Distr.*: V—also Tas., N.S.W., A.C.T.

[The Common Forget-me-not, *M. arvensis* (L.) Hill of Europe, was collected at Olinda, Vic., in Nov. 1905—presumably as a garden escape. It resembles *M. sylvatica*, but has much smaller flowers (only 3-5 mm. diam.).]

### \*LITHOSPERMUM L. (1753)

\**L. arvense* L. *Spec. Plant.* 1: 132 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1023 (1957); Ross-Craig, *Drawings Brit. Plants* 21: t. 19 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 992 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 221 fig. 5, col. (1927); Tideman, *J. Dep. Agric. S. Aust.* 69: 154 (1965)—seedling; Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 78 D (1940); Burbidge, *Flor. Aust. Cap. Terr.* fig. 309 (1970).

*Vern.*: Corn Gromwell. *Distr.*: ABCGHJKMNPRZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

[Some authors, e.g. H.J. Eichler in his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 264 (1965), prefer to assign this species to a closely related genus, *Buglossoides* Moench, differing from *Lithospermum* only in the disposition of hairs within the corolla. For those who support this cleavage, the name of the common Corn Gromwell would be *B. arvense* (L.) I. M. Johnston in *J. Arnold Arbor* 35: 42 (1954).

In Jan. 1960 a few plants of yellow-flowered, Mediterranean *Neatostema apulum* (L.) I. M. Johnston (1953) appeared at Kaniva, presumably adventive from South

Australia where the species is already established; this monotypic genus differs from *Lithospermum* in its smaller, less tuberculate fruitlets. The hybrid Blue Comfrey, *Symphytum × uplandicum* Nyman (syn. *S. peregrinum* auctt.), has been found (Jan. 1969) forming large patches of 80-100 yds. in length along roadsides near Menzies Creek in the Emerald district; this pendulous- and bluish-flowered European perennial is sometimes cultivated for fodder—as on the Mornington Peninsula—and differs from *S. officinale* L. (Common Comfrey) in its much less decurrent leaves and ± accrescent calyces. Other casual but non-persisting introductions of *Boraginaceæ* into Victoria embrace the following species: *Borago officinalis* L. (Borage), a large-flowered Mediterranean annual with a prominent beak of fused anthers projecting from each blue corolla; and *Pentaglottis sempervirens* (L.) Tausch, the perennial blue-flowered Alkanet of W. Europe which appeared at Mitta Mitta in Jan. 1967. The last three species are recorded as occasional along roadsides in Tasmania.]

### Family \*POLEMONIACEÆ

\*NAVARRETIA Ruiz & Pav. (1794)

\**N. squarrosa* (Eschsch.) Hook. & Walk.-Arn. *Bot. Capt. Beech. Voy.* 368 (1839).

*Hoitzia squarrosa* Eschsch. in *Mém. Acad. Sci. St.-Petersb.* 10: 282 (1826);

*Gilia squarrosa* (Eschsch.) Hook. & Walk.-Arn. *l.c.* 151 (1833).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4001 (1951); Black, *Flor. S. Aust.* ed. 2: fig. 1006 (1957); Cock, *Tasm. J. Agric.* 24: 134 (1953); Wauer in Ewart, *Weeds . . . Vict.* t. opp. 42, col. (1909); Davey, *J. Dep. Agric. Vict.* 21: 231 (1923)—all but the first two as *Gilia squarrosa*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 307 (1970).

*Vern.*: Californian Stinkweed (Skunkweed in U.S.A.). *Dist.*: JKNRSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

[*Gilia achilleifolia* Benth. in *Edwards's bot. Reg.* 19: sub. t. 1622 (1833) and *Collomia linearis* Nutt. *Gen. N.-Amer. Plants* 1: 126 (1818) are North American annuals that have occasionally escaped from garden culture in Victoria, but are not truly naturalized members of *Polemoniaceæ*. The former has much dissected foliage and blue flowers in heads terminating long leafless peduncles, the latter entire linear leaves and pink, centaury-like flowers in dense leafy heads—it has appeared at Romsey (1907), Daylesford (1944) and Moyhu (1923).]

### Family CUSCUTACEÆ

CUSCUTA L. (1753)

1. Flowers creamy, pedicellate, on stalks 4-15 mm. long, forming small clusters of 2-5 on the relatively coarse yellowish stems; corolla 3-4 mm. diam.; staminal filaments short; styles as long as ovary, with large globoid stigmas (plants of saline flats, usually parasitizing *Wilsonia* spp.):



*C. tasmanica* Engelm. in *Trans. Acad. Sci. St Louis* 1: 512 (1859).

*Vern.*: Golden Dodder. *Distr.*: ACJNV—also S.A., Tas., N.S.W.

Flowers white to pinkish,  $\pm$  hyaline, sessile or on stalks <2 mm. long, forming globular heads

2. Stems rather coarse; corolla subgloboid, with obtuse segments; ovary depressed at apex; stigmas globular; stamens included:

*C. australis* R. Br. *Prodr. Flor. Nov. Holl.* 491 (1810).

*Illust.*: Cochrane in Ewart, *Weeds* . . . *Vict.* t. 11 opp. 47, col. (1909); Cochrane, *Yearbook Dep. Agric. Vict.* 1905: t. opp. 72, col. (1905); White in Bailey, *Compr. Cat. Qd Plants* fig. 330 (1913); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3074 (1927), as var. *breviflora*.

*Vern.*: Australian Dodder. *Distr.*: EKMNRSTVW—also S.A., N.S.W., Qd.

—Stems hair-like; corolla  $\pm$  urceolate; ovary pointed; stigmas linear

3. Flowers 5-partite, with acute segments, scented; stamens exerted (but shorter than corolla); styles longer than ovary:

\**C. epithymum* (L.) Murr. *Syst. Veg.* ed. 13: 140 (1774).

*C. europæa* var. *epithymum* L. *Spec. Plant.* 1: 124 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1005 (1957); Ross-Craig, *Drawings Brit. Plants* 21: t. 27 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 1001 (1961); Wall in Clarke, *Bull. Dep. Agric. S. Aust.* n. 313: t. opp. 82, col. (1937); *ibid.* n. 406: 95 fig. 6 (1949); White in Ewart, *Weeds* . . . *Vict.* t. opp. 47, col. (1909); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3064-3066 (1927), as *C. Epithymus*; Abrams, *Ill. Flor. Pacific States* 3: fig. 3886 (1951).

*Vern.*: Common Dodder. *Distr.*: KPR—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Flowers usually 4-partite, with obtuse segments; stamens included; styles shorter than ovary (Greater Melbourne area):

\**C. europæa* L. *Spec. Plant.* 1: 124 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 26 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 1000 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3069 (1927); Yunker, *Univ. Illin. biol. Monogr.* 6: t. 1 fig. 5 (1921); Coste, *Flor. Franc.* 2: fig. 2538 (1903).

*Vern.*: Large Dodder. *Distr.*: N—also N.S.W., Qd.

[Sporadic occurrences of three other alien *Cuscuta* species have been noted, but these are very doubtfully naturalized in Victoria, viz.: Brazilian *C. racemosa* Mart. which appeared near Sale in May 1915, European *C. epilinum* Weihe at Ballarat in Dec. 1910, and Mediterranean *C. planiflora* Ten. variants of which have been collected in window-boxes of *Petunia* at the Fitzroy Gardens, Melbourne (Dec. 1947) and on clover at Ballarat (Oct. 1961). *C. racemosa* resembles *C. australis*, but has finer stems and fragrant flowers ( $\pm$  3 mm. long) all distinctly pedicellate in racemose cymes. *C. planiflora* approaches *C. epithymum* in its long styles, but differs in the dense minute heads (2-4 mm. diam.) of sessile flowers ( $\pm$  2 mm. long) with included stamens, while *C. epilinum* departs from *C. europæa* in its 5-merous, sessile flowers with overlapping calyx-lobes and depressed capsules. An excellent, detailed and illustrated account of these introductions is provided

by T. G. Yuncker's "Revision of the North American and West Indian Species of *Cuscuta*" in *Univ. Illin. biol. Monogr.* 6: 1-142 (1921).]

### Family CONVOLVULACEÆ

[J. Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 484 (1959) removed this family from its Englerian position before the *Polemoniaceæ* and *Boraginaceæ* (Order "Tubifloræ") to his smaller order *Solanales*, including also the families *Solanaceæ* and *Nolanaceæ*—a concept adopted in the present handbook.]

1. Stems prostrate, *rooting at nodes*; leaves entire, *reniform to ± orbicular*; flowers axillary and solitary, small, greenish, inconspicuous; carpels 2, *separate*, each with a *free lateral style* *Dichondra* (p. 541)  
Stems various but *never rooting at nodes*; leaves *not reniform*; carpels *united* in a 2-locular ovary 2
2. Leaves >2 cm. long; corolla >1 cm. wide (when expanded); style 1 (plant often *twining*) 4  
Leaves <2 cm. long (often <1 cm.); corolla <1 cm. wide, white or creamy; styles 2, free or united for lower half (plant *never twining*) 3
3. Plant *procumbent*, often mat-forming; sepals *united*, forming a 5-toothed calyx-tube; styles *united throughout lower half* (usually coastal)  
*Wilsonia* (p. 541)  
Plant *erect*; sepals *free*; styles *united only at base* (small grey-pubescent perennial to 6" high, on saline Mallee soils) *Cressa* (p. 542)
4. Corolla *blue*; stigma *single, globose*, deeply papillate-rugose; pollen-grains *echinulate*; capsule 4- to 6-valved *\*Ipomæa* (p. 544)  
Corolla *white or pink*; stigmas 2, *oblong or terete*; pollen-grains *smooth or wrinkled* but not echinulate 5
5. Bracteoles very *small, distant from calyx*; capsule 2-locular *Convolvulus* (p. 542)  
Bracteoles *large, as long as and often enclosing the calyx*; capsule 1-locular *Calystegia* (p. 543)

### DICHONDRA Forst. & Forst. f. (1776)

*D. repens* Forst. & Forst. f. *Charact. Gen. Plant.* 40, t. 20 (1776).

*Illust.*: Forster (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 31, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1002 (1957); A. L. C. in Cabrera, *Manual Flor. Alrededores B. Aires* fig. 141 (1953); Abrams, *Ill. Flor. Pacific States* 3: fig. 3850 (1951); Rodway, *Tasm. Flor.* [t. 22] (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 306 (1970).

*Vern.*: Kidney-weed. *Dist.*: CDEFJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., N.Z.

### WILSONIA R. Br. (1810)

1. Leaves *glabrous, linear-lanceolate*, often *acute or mucronate*, 5-15 mm. long; corolla-tube 10-15 mm. long, *± twice as long as calyx*; stamens *long-exserted*; stigmas *ovoid* (coastal salt-marshes):

*W. backhousei* Hook. f. in Hook. *Lond. J. Bot.* 6: 275 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 994 D-E (1957); Curtis, *Student's Flor. Tasm.* 3: 500 fig. 113 (1967); Carpenter in Hamilton, *Proc. Linn. Soc. N.S.W.* 44: t. 27 fig. 21 (1919).

*Vern.*: Narrow-leaf *Wilsonia*. *Distr.*: CEJNPWXZ—also W.A., S.A., Tas., N.S.W.

—Leaves variously *hairy*, ovate-oblong to orbicular, *obtuse*, 2-4 mm. long; corolla-tube 4-6 mm. long, *no longer* than calyx; stamens only *shortly exserted*; stigmas *depressed-globoid* 2

2. Foliage *distichous*, closely *imbricate*, *silvery* from a short silky pubescence; leaf *concave*, *ovate to oblong* (chiefly on coastal marshes and some saline flats of far W.):

*W. humilis* R. Br. *Prodr. Flor. Nov. Holl.* 490 (1810).

*Illust.*: Curtis, *Student's Flor. Tasm.* 3: 500 fig. 112 (1967).

*Vern.*: Silky *Wilsonia*. *Distr.*: CDEKNPW—also W.A., S.A., Tas., N.S.W.

—Foliage neither *distichous* nor *imbricate*, with loose spreading hairs and *not silvery*; leaf flat, *orbicular to broadly ovate* (widespread on drying, usually  $\pm$  saline mud):

*W. rotundifolia* Hook. *Icon. Plant.* 5: t. 410 (1842).

*Illust.*: Hooker (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1004 (1957); Peter in Engler, *Natürl. PflFam.* IV 3a: 15 fig. 7 A-C (1891).

*Vern.*: Round-leaf *Wilsonia*. *Distr.*: BCDGJKNPVW—also W.A., S.A., N.S.W.

### CRESSA L. (1753)

*C. cretica* L. *Spec. Plant.* 1: 223 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 994 F-G, also 1001 (1957); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1944, col. (1924); Coste, *Flor. Franc.* 2: fig. 2533 (1903); Peter in Engler, *Natürl. PflFam.* IV 3a: 15 fig. 7 D-G (1891).

*Vern.*: Rosinweed. *Distr.*: ABCEG—also W.A., S.A., N.S.W., Qd, N. Terr.

### CONVOLVULUS L. (1753)

Lower leaves variously *crenate* or *lobed*, sepals *acute*, mostly *pubescent* (sometimes almost glabrous with age); corolla usually pink, 12-20 mm. long; stigmas almost *as long as* style; seeds  $\pm$  *muricate* (stems procumbent and trailing, rarely climbing; widespread on lower grasslands and in more open shrubberies):

*C. erubescens* Sims in Curtis's *bot. Mag.* 27: t. 1067, col. (1807).

*Illust.*: Sims (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 227, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 133 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 997 (1957); Leigh & Mulham, *Pastoral Plants Riverine Plain* 104, col. (1965); Lee, *Wild Life (Melb.)* 12: 200 (1950); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 200 (1906); Charsley, *Wild Flowers*

*Melb.* t. 12 fig. 5, *col.* (1867); Burbidge, *Flor. Aust. Cap. Terr.* fig. 305 (1970); Garnet, *Wildflowers Wilson's Prom.* t., *col.* n. 695 opp. 31 (1971).  
*Vern.*: Pink Bindweed (Blushing Bindweed). *Distr.*: ABCDEHJKLMNPRSTUVW  
 —also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust.

Lower and upper leaves with *entire* margins (but auriculate at base); sepals *obtus*e, *glabrous* (or occasionally finely puberulent); corolla mostly white, 20-30 mm. long, stigmas *much shorter* than style; seeds *glabrous* or slightly rough (stems twining extensively; a pernicious weed):

\**C. arvensis* L. *Spec. Plant.* 1: 153 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 998 (1957); Butcher, *New ill. Brit. Flor.* 2: fig. 996 (1961); Ross-Craig, *Drawings Brit. Plants* 21: t. 25 (1965); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 43, *col.* (1958); Orchard, *J. Dep. Agric. S. Aust.* 50: 180 (1946); H. H. in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 6: 534, also t. *col.* (1957); H. H. in Meadly, *Weeds W. Aust.* 118 *col.*, 119 (1965); Abrams, *Ill. Flor. Pacific States* 3: fig. 3868 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5\*: t. 218 fig. 3, *col.* (1927).

*Vern.*: Common Bindweed (Field Bindweed). *Distr.*: ADJNP—also S.A., Tas., N.S.W., A.C.T.

### CALYSTEGIA R. Br. (1810)

1. Leaf-blades  $\pm$  *fleshy*, *reniform*, *blunt to emarginate*, irregularly crenate, 1.5-2.5 cm. long, *shorter* than petioles; bracteoles slightly *shorter* than calyx; corolla 2.5-5 cm. long, white to pink or mauve (stems trailing on coastal dunes on and east from Wilson Promontory):

*C. soldanella* (L.) R. Br. *Prodr. Flor. Nov. Holl.* 484 (1810).

*Convolvulus soldanella* L. *Spec. Plant.* 1: 159 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 23 (1965); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 625, *col.* (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 999 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 3853; Hegi, *Ill. Flor. Mittel-Eur.* 5\*: fig. 3055 a & b (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1938, *col.* (1924)—the last three as *Convolvulus Soldanella*.

*Vern.*: Sea Bindweed. *Distr.*: TZ—also Tas., N.S.W., Qd, N.Z.

—Leaf-blades *membranous*, *ovate to lanceolate*, *acute*, *as long as* or longer than petioles; bracteoles distinctly *longer* than calyx (climbers and twiners)

2. Corolla  $\pm$  2 cm. long; bracteoles  $\pm$  *orbicular*, <1 cm. long; basal lobes of leaves *divergent*, *acute*, sometimes unequally bifid; capsule globular, 5-7 mm. long (plant 2-4 ft. tall, in moist forested gullies of W., S. & E.):

*C. marginata* R. Br. *Prodr. Flor. Nov. Holl.* 483 (1810).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 265, *col.* (1968); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 199 (1906); Fitch in Hooker f., *Flor. Nov.-Zel.* 1: t. 48 (1853).

*Vern.*: Forest Bindweed. *Distr.*: DJKNTWZ—also N.S.W., N.Z.

—Corolla 4-7 cm. long; bracteoles ovate or >1 cm. long; basal lobes of leaves  $\pm$  parallel, obtuse (plants attaining 4-9 ft.) 3

3. Bracteoles pointed, 1-1.5 cm. long, overlapping only toward base where flat or very slightly keeled; calyx to 1 cm. long; capsule subglobose 7-8 mm. long (widespread in swampy tracts, especially bordering streams):

**C. sepium** (L.) R. Br. *Prodr. Flor. Nov. Holl.* 483 (1810).

*Convolvulus sepium* L. *Spec. Plant.* 1: 153 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 994 A-C, 999 (1957); Butcher, *New ill. Brit. Flor.* 2: fig. 997 (1961); Ross-Craig, *Drawings Brit. Plants* 21: t. 22 (1965); Poole & Adams, *Trees & Shrubs N.Z.* 209 (1963); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 98, col. (1967); Cock, *Tasm. J. Agric.* 24: 133 (May 1953); Abrams, *Ill. Flor. Pacific States* 3: fig. 3854 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>a</sup>: t. 218 fig. 2 col., also fig. 3052 (1927)—the last two as *Convolvulus sepium*.

*Vern.*: Large Bindweed (Pohue—Maori name). *Distr.*: DEJNPRSTWX—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Bracteoles blunt or truncate, 2-3.5 cm. long, overlapping for greater part, the base much inflated and keeled; calyx 1.5-2 cm. long; capsule ovoid, pointed, 10-12 mm. long (occasional creeper about settlements, usually on waste ground):

**\*C. silvatica** (Kitaibel) Griseb. *Spic. Flor. Rumel. Bithyn.* 2: 74 (1844).

*Convolvulus silvaticus* Kitaibel in Schrad. *Neues J. Bot.* 1<sup>a</sup>: 163 (1805).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 24 (1965); Butcher, *New ill. Brit. Flor.* 2: fig. 998 (1961); Moon in *Garden* 50: t. 1098 opp. 514, col. (1896); Reichenbach, *Icon. Flor. germ.* 18: t. 1341 fig. I, col. (1858); Javorka & Csapody, *Icon. Flor. Hungar.* 406 (1932); Everard, *Wild Flowers World* t. 18 fig. c, col. (1970).

*Vern.*: Greater Bindweed. *Distr.*: KNW—also Tas.

[Opinions vary on the taxonomic status of this plant. If, as in Clapham, Tutin & Warburg's *Flor. Brit. Isles* ed. 2: 666 (1962), it is assigned subspecific rank, then it must be called *C. sepium* subsp. *silvatica* (Kitaibel) Maire. *C. sylvestris* (Willd., ut *Convolvulus* sp.) Roem. & Schult. is a synonym.]

#### \*IPOMÆA L. (1753)

**\*I. congesta** R. Br. *Prodr. Flor. Nov. Holl.* 485 (1810).

*I. leari* Paxton *Paxton's Mag. Bot.* 6: t. opp. 267, col. (1839);

*I. purpurea* sens. auctt. plur., non (L.) Roth *Bot. Abh.* 27 (1787).

*Illust.*: Paxton (*l.c.*); Van Ooststroom, *Flor. Malesiana* 4<sup>a</sup>: 466 fig. 39 A (1953); Haygarth in Wood, *Natal Plants* 1: t. 93 (1899).

*Vern.*: Lear's Morning-glory. *Distr.*: NP (widely grown climber on fences etc., difficult to eradicate)—also N.S.W., Qd (indigenous in far north).

[*I. leari* Paxton (*l.c.*) is retained as a distinct species by some authors, but is here considered merely as a long-cultivated, luxuriant condition of *I. congesta* from

which it does not appear to differ in any essential feature—a view endorsed by A. D. J. Meeuse in "The South African Convolvulaceæ", *Bothalia* 6: 735 (1957). In their *Handb. vasc. Plants Sydney Distr.* 405 & 577 (1962) Beadle, Evans & Carolin have equated *I. congesta* with *I. indica* (Burm.) Merrill; but Van Oostroom's monograph in *Flora Malesiana* (l.c.) regards such a synonymy as dubious.

Ewart, *Flor. Vict.* 960 (1931), admitted as a naturalized garden escape *Nolana prostrata* L. (Prostrate Bell-flower) of Peru. The only confirmatory specimen in Melbourne Herbarium is one collected at Geelong in 1881 and, if ever truly established here, this herb must have died out long ago. It is a hairy plant having stalked ovate leaves, axillary flowers and blue funnel-shaped corollas ( $\pm$  2 cm. wide) striped with purple. J. Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 487 (1959) has assigned *Nolana* (as with *Cuscuta*) to a distinct family, *Nolanaceæ*, differing from *Convolvulaceæ* in its 5-locular (not 1- to 4-locular) ovaries and bony fruits.]

### Family SOLANACEÆ

1. Stamens 4 (with or without a staminode); fruit capsular (shrubs of far W. & N.W. or far E.) *Anthocercis* (p. 558)  
Stamens 5 (all functional) 2
2. Fruit a *berry* (sometimes enclosed by enlarged calyx); leaves various 5  
Fruit a *capsule*; leaves relatively large, always  $>4$  cm. long 3
3. Corolla-tube pale yellow, relatively *wide*, exceeding the calyx by only  $\pm$  5 mm.; capsule *almost enclosed* by calyx, *circumscissile*, opening by an *apical lid* (viscid, rank-smelling annuals or biennials) *Hyoscyamus* (p. 559)  
Corolla-tube relatively *narrow*, exceeding the calyx by much  $>5$  mm.; capsule opening lengthwise by 2 or 4 valves 4
4. Flowers in *racemes* or *panicles*; calyx campanulate, wholly persistent; capsule  $<2$  cm. long, *smooth*, 2-valved; seeds brown, *minute*,  $<1$  mm. long *Nicotiana* (p. 556)  
Flowers *solitary*, interpetiolar; calyx tubular, *circumscissile* (only the base persisting in fruit); capsule  $>2$  cm. long, *prickly*, 4-valved; seeds often blackish, 2-4 mm. long *Datura* (p. 555)
5. Berry fully *exposed*, the calyx *not* or only slightly enlarged 7  
Berry *enclosed by the much enlarged papery calyx*; corolla rotate, with short wide tube; anthers never connivent 6
6. Flowers *white* or *yellow*; ovary 2-locular; fruiting-calyx bladdery, *shortly 5-toothed* (perennials) *Physalis* (p. 547)  
Flowers *blue*; ovary 3- to 5-locular; fruiting-calyx *deeply 5-partite* (annual, at Kyneton, Numurkah & Gippsland) *Nicandra* (p. 546)
7. Corolla narrowly *funnel-shaped* or *tubular* (shrubs, often tall and  $\pm$  thorny; anthers much shorter than filaments) 9  
Corolla *rotate* or *campanulate* 8
8. Flowers mostly in *axillary clusters*, often purplish; corolla-tube *short*; anthers *basifixed*, opening by *terminal pores*, *longer* than filaments, *connivent* in a conspicuous cone around the style *Solanum* (p. 548)

Flowers *solitary, distant*,  $\pm$  pendulous, white; corolla-tube shortly *cylindrical*; anthers *dorsifixed*, opening by *longitudinal slits*, shorter than filaments, *free* from each other (climbing herb with entire, rather hirsute, ovate-rhomboid leaves 1-2" long, chiefly near-coastal)

\**Salpichroa* (p. 555)

9. Leaves to 1" (rarely to 2") long, mostly *fascicled*, sometimes  $\pm$  succulent; flowers *solitary* or in small clusters of 2-4; corolla to  $\pm$  10 mm. long, *white or pink to mauve*, the tube not much exceeding calyx; berry conspicuous, usually orange to red (branchlets  $\pm$  spiny)

*Lycium* (p. 546)

Leaves  $> 2"$  long, neither *fascicled* nor *fleshy*; flowers *numerous* in terminal or axillary clusters; corolla  $> 15$  mm. long, *yellow*, the slender tube far exceeding calyx, strongly scented at night; berry small (garden escape, the branchlets never spiny)

\**Cestrum* (p. 556)

### \**NICANDRA* Adans. (1763)

\**N. physaloides* J. Gærtn. Fruct. & Semin. Plant. 2: 237, t. 131 fig. 2 (1791).

*Illust.*: Gaertner (*l.c.*); *Curtis's bot. Mag.* 51: t. 2458, col. (1824); Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 83 (1940); Everist, *Common Weeds Farm & Pasture* fig. 105 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 54: fig. 3395, 3405 c-i (1927); Georgia, *Manual Weeds* fig. 259 (1914); Coste, *Flor. Franc.* 2: fig. 2629 (1903).

*Vern.*: Apple of Peru. *Distr.*: MNTW—also W.A., N.S.W., Qd, N.Z.

### LYCIUM L. (1753)

1. Corolla-lobes *much shorter than tube*; stamens *enclosed* 3  
Corolla-lobes about *as long as tube*, or slightly shorter; stamens *projecting* 2
2. Leaves  $\pm$  *fleshy*, oblanceolate, *broad*er towards tip, to 1" long; branches *divaricate* and *extremely thorny*; berry orange-red, almost *globular* (very widespread woody weed to 15 ft. high, formerly used for hedging on farms):

\**L. ferocissimum* Miers in *Ann. & Mag. nat. Hist. ser. 2, 14*: 187 (1854).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1080 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 125 (1949); Perry & Meares, *Agric. Gaz. N.S.W.* 75: 1202 (1964); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 31 B (1951); Miers, *Ill. S. Amer. Plants* 2: t. 70 (1849-57); Burbidge, *Flor. Aust. Cap. Terr.* fig. 324 (1970).

*Vern.*: African Box-thorn. *Distr.*: ABCEHJKMNPRWZ—W.A., S.A., Tas., N.S.W., A.C.T., Cent. Aust., N.Z.

—Leaves *membranous*, lanceolate to ovate-lanceolate, *narrower* towards tip, mostly 1-2" long; branches slender, whitish, with *few or no thorns*; berry red, *oblong* (occasional escape from hedges):

\**L. barbarum* L. *Spec. Plant.* 1: 192 (1753).

*L. chinense* sens Ewart *Flor. Vict.* 999 (1931), atque auctt. plur., *non strict.* Mill. (1768).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 21: t. 30 (1965); Poinso in Bonnier, *Flor. compl. Franc. Suisse & Belg.* 8: fig. 2014, col. (1926); Reichenbach, *Icon. Flor. germ.* 20: t. 1635 fig. 1, col. (1861), as *L. afrum*.

*Vern.*: Chinese Box-thorn. *Distr.*: CEHJKMNP—also S.A., N.S.W., Qd, N.Z.

3. Corolla  $\pm$  10 mm. long; berry *oblong*, 6-10 mm. long; leaves oblanceolate to obovate, *extremely fleshy*, grey-green, 5-15 mm. long (divaricate shrub 2-4 ft. high, on saline flats of far N.W. Mallee):

*L. australe* F. Muell. *Frugm. Phyt. Aust.* 1: 83 (1859).

*Vern.*: Australian Box-thorn. *Distr.*: ABF—also W.A., S.A., N.S.W., Qd.

—Corolla 15-20 mm. long; berry *globoid*, 12-15 mm. long; leaves linear to narrowly oblanceolate; only *slightly fleshy*, green, 12-25 mm. long (tall shrub to 10 ft. or more, of very sparse occurrence at Sorrento, Inglewood and far S.W.):

\**L. afrum* L. *Spec. Plant.* 1: 191 (1753).

*Illust.*: Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2013, col. (1926); Coste, *Flor. Franc.* 2: fig. 2621 (1903); Bailey, *Qd agric. J.* 22: 187 (1909).

*Vern.*: Kaffir Box-thorn. *Distr.*: DHP—also Qd.

### \**PHYSALIS* L. (1753)

1. Leaf-blades mostly  $<1$ " wide, *tapered* into petiole, the pubescence (when present) of *microscopic forked hairs*; corolla greenish-yellow; fruiting calyx 10-ribbed, pale greenish, 1.5-2 cm. wide, on pedicels 1-2 cm. long (widespread perennial weed with creeping rootstock):

\**P. ?viscosa* L. *Spec. Plant.* 1: 183 (1753).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1078 (1957); Curtis's *bot. Mag.* 53: t. 2625, col. (1825); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 155 (1913).

*Vern.*: Sticky Ground-cherry. *Distr.*: LNPTWZ—also S.A.

[The name *P. viscosa* is employed tentatively, pending a critical revision of all the *Physalis* taxa naturalized in Australia. J. F. Macbride, in *Bot. Ser. Field Mus. nat. Hist.* 13, Part V-B, n. 1 (Flora of Peru): 23 (1962), has described the true Peruvian *P. viscosa* as having a *stellate* pubescence, *subcordate* leaves and relatively large flowers (1-2 cm. long)—features that are not matched by any Victorian population. Ewart, *Flor. Vict.* 1001 (1931) admits the North American *P. lanceolata* Michx. as "now abundant" in the Shepparton irrigation district, but voucher specimens from that area have *minute forked hairs* (exactly as in the taxon now being referred with hesitation to *P. viscosa*) and *not* the long stiff hairs attributed to *P. lanceolata* in current American floras, e.g. by Leroy Abrams (1951). Transitory urban populations (Alexandra Gardens in Melbourne and at Kew, 1943-



1944), dubiously referred to *P. longifolia* Nutt., also bore minute forked hairs and probably belong to this "*P. viscosa*" complex.]

- Leaf-blades 1-2" wide or more, *not* tapering into petiole, the pubescence of *simple hairs*; fruiting calyx 2.5 cm. wide or more (garden escapes) 2
2. Leaves *grey-pubescent*, obliquely *subcordate* at base of blade; flowers *yellow* with 5 purple blotches in throat; fruiting calyx prominently 5-ribbed, *greenish, downy*, 2.5-3.5 cm. wide (plant 1-3 ft. high):

\**P. peruviana* L. *Spec. Plant.* ed. 2, 2: 1670 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1077 (1957); Bailey, *Standard Cycl. Hort.* 3: fig. 2935 (1935); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 213 (1906); Britton, *Flor. Bermuda* 335 (1918).

*Vern.*: Cape Gooseberry. *Distr.*: LTWZ—also W.A., S.A., N.S.W., Qd, N. Terr., N.Z., N.G.

- Leaves *green*, sparsely pubescent, the blade sharply contracted but *hardly subcordate* at base; flowers wholly *creamy-white*; fruiting calyx 10-angled, *brick-red*, almost *glabrous*, 3-5 cm. wide (extensively rhizomic plant, seldom >1 ft. tall):

\**P. alkekengi* L. *Spec. Plant.* 1: 183 (1753).

*Illust.*: Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 233 fig. 1, *col.* (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2020, *col.* (1926); Javorka & Csapody, *Icon. Flor. Hungar.* 449 (1933); Coste, *Flor. Franc.* 2: fig. 2628 (1903); v. Wettstein in Engler, *Natürl. PflFam. IV* 3b: 20 fig. 9 A-G (1891).

*Vern.*: Alkekengi (Bladder Cherry, Chinese Lantern Plant). *Distr.*: JN—sporadic.

[Asiatic *P. angulata* L. appeared at Dookie in 1907, but soon died out and has not been collected again in Victoria; it is distinguishable by the coarsely toothed, acuminate, virtually glabrous leaves and relatively long calyx-lobes (almost equal to tube).]

### SOLANUM L. (1753)

1. Plants with prickles on stems, leaves or calyx (sometimes on all three) or, if sometimes lacking prickles, then covered with a greyish *stellate indumentum* 12  
Plants without prickles, green, either glabrous or with scattered simple hairs 2
2. Corolla up to 1 cm. wide or, if ever more, then white and the globular berry scarlet (plants often annual) 6  
Corolla >1 cm. (and up to 5 cm.) wide, always *blue to violet*; ripe berry green, yellow or orange (shrubby perennials to 10 ft. high, the lobed or entire leaves >6 cm. long) 3
3. Ripe berries green to ivory-hued, *globoid*, with large conspicuous stone cells 5  
Ripe berries yellow to orange, *ellipsoid* 4

4. Corolla-limb bluish to purple, 3-5 cm. wide, *hardly cleft at all*, the 5 lobes very shallow, *obtuse* and often emarginate; anther-filaments stout,  $\pm$  5 mm. long; seeds 2.0-2.5 mm. long; white masses of stone cells *large and prominent* giving to the dried fruits a *coarsely warted* appearance (tetraploid plant, throughout southern districts but more frequent in west, especially on basaltic "stony-rises" and granite hills):

*S. laciniatum* Ait. *Hort. kew.* 1: 247 (1789).

[Key characters of this and the succeeding 3 species have been adopted from a critical study by G. T. S. Baylis in *Aust. J. Bot.* 11: 168-177 (1963).]

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 233, col. (1968); Galbraith, *Wild Flowers Vict.* ed. 3: t. 136 (1967), as *S. aviculare*; Rosser, *Wildflowers Vict.* 27, col. (1968); Snelling in *Curtis's bot. Mag.* 152: t. 9154, col. (1928); Poole & Adams, *Trees & Shrubs N.Z.* 208 (1963); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: tt. 69 & 70, col. (1967); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 32 (1951), as *S. aviculare*; Baylis, *Aust. J. Bot.* 11: tt. inter 176 & 177 (1963).

*Vern.*: Kangaroo Apple. *Distr.*: CDEJKNPTVWZ—also Tas., N.S.W., N.Z.

—Corolla-limb often lavender, *manifestly cleft* into 5 *acutish* lobes; anther-filaments  $\pm$  3 mm. long; seeds 1.2-2.0 mm. long; stone cell masses *inconspicuous*, the dried fruits smooth or *only finely warted* (diploid plant of scattered range E. and N.E. from Port Phillip to borders of N.S.W., often along streams):

*S. aviculare* Forst. f. *Flor. Ins. Aust. Prodr.* 18 (1786).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 256, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 565, col. (1967); Baylis, *Aust. J. Bot.* 11: tt. inter 176 & 177 (1963); Ewart, *Flor. Vict.* fig. 325 (1931); Poole & Adams, *Trees & Shrubs N.Z.* 208 (1963); Abrams, *Ill. Flor. Pacific States* 3: fig. 4495 (1951).

*Vern.*: Kangaroo Apple (Poroporo—Maori name). *Distr.*: MNPRSTVWZ—also ?S.A., Tas., N.S.W., Qd, N.Z., N.G.

5. Corolla 2.8-4.0 cm. diam.; ripe berry 2-3 cm. diam.; ratio of seeds to stone cells  $\pm$  5:1 (near-coastal in S. & E. Gippsland between Waratah Bay and Lakes Entrance; diploid plant):

*S. vescum* F. Muell. in *Trans. Vict. Inst.* 69 (1855).

*Illust.*: Baylis, *Aust. J. Bot.* 11: tt. inter 176 & 177 (1963); Domin, *Bibl. bot., Stuttgart* 22 (Heft 89): 1129 fig. 184 (1929), as *S. aviculare*; Mueller, *Key Syst. Vict. Plants* 2: fig. 103 (1886).

*Vern.*: Kangaroo Apple (Gunyang—aborig.). *Distr.*: TW—also N.S.W., A.C.T., Tas. (Bass Strait islands).

—Corolla 1.1-2.8 cm. diam.; ripe berry 1-2 cm. diam.; seeds usually *dark brown*, with finely *reticulate-tuberculate* sculpture, their ratio to stone cells  $\pm$  5:3 (tetraploid plant, widespread in Mallee, with isolated occurrences in drier N.E.):

*S. simile* F. Muell. in *Trans. phil. Soc. Vict.* 1: 19 (1855).

*Illust.*: Baylis, *Aust. J. Bot.* 11: tt. inter 176 & 177 (1963); Kraehenbuehl, *Vict. Nat.* 88: 229 t. 3 (1971).

*Vern.*: Oondoroo. *Distr.*: ABCDFGMR—also W.A., S.A., N.S.W., Qd.

—As for the last, but seeds *straw-coloured*, with closely *striate* sculpture, their ratio to stone cells 6:1 to 5:2 (diploid plant, occasional in montane E. Gippsland between Nunniong Plateau & Mt. Tingaringy; leaves often <1 cm. wide):

*S. linearifolium* I. I. Herasimenko in *Byull. glavn. bot. Sada, Leningr.* 59: 71-72 (1965).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 325 (1970).

*Vern.*: Mountain Kangaroo Apple. *Distr.*: VWZ—also N.S.W., A.C.T.

6. Leaves *deeply lobed* or dissected; flowers regularly in *threes*, white, <6 mm. long; calyx accrescent in fruit; ripe berry olive-green to bronzy, strongly *sweet-scented*, 8-12 mm. diam.; seeds  $\pm$  2 mm. long (widespread annual weed of drier northern and far eastern districts):

\**S. triflorum* Nutt. *Gen. N.-Amer. Plants* 1: 128 (1818).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1066 (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 4493 (1951); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 165 (1913); Pammel, *Manual poison. Plants* fig. 421 (1911).

*Vern.*: Cut-leaf Nightshade (Three-flowered Nightshade). *Distr.*: CHMQRVWZ—also S.A., N.S.W., A.C.T.

—Leaves entire or sinuate-toothed; flowers *not* regularly in threes 7

7. Flowers white, 15-20 mm. diam., solitary or in extra-axillary clusters of 2-4; berry *scarlet*, 10-15 mm. diam. ( $\pm$  glabrous shrub 1-4 ft. high, scattered through cooler districts and chiefly along streams):

\**S. pseudocapsicum* L. *Spec. Plant.* 1: 184 (1753).

*Illust.*: Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 31 c (1951); Bailey, *Standard Cycl. Hort.* 3: fig. 3630 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3407 & 3410 (1927).

*Vern.*: Madeira Winter-cherry (Jerusalem Cherry). *Distr.*: JNRTW—also Tas., N.S.W., Qd, N.Z.

—Flowers rarely 15 mm. diam., >4 together, in racemose or contracted umbel-like cymes; berry *green to purplish or black*, <8 mm. diam. (herbaceous annuals or perennials, seldom >2 ft. high) 8

8. Flowers strictly *umbellate*, white to pinkish or mauve, each 5-7 mm. wide; anthers 1.0-1.8 mm. long, not or hardly exceeded by the style; fruiting calyx often manifestly *reflexed*; surface of berry glossy; seeds  $\pm$  1.5 mm. long (glabrous to slightly hairy diploid annual, near coasts around and east from Otways):

\**S. nodiflorum* N. J. Jacq. *Icon. Plant. rar.* 2: 288 (1786), t. 326 (1794).

*Illust.*: Jacquin (*l.c.*); Baylis, *Trans. roy. Soc. N.Z.* 85: t. 25 opp. 382 fig. 1, 5, 6, 7 (1958); St. John & Hosaka, *Res. Publ. Univ. Hawaii* n. 6: 136 (1932); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 309 (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 4490 (1951).

*Vern.*: Nightshade. *Distr.*: KSZ—also N.S.W., N.Z.

—Flowers shortly *racemose* (or even subpaniculate); anthers 2-4 mm. long; fruiting calyx slightly or *not* reflexed; berry matt or moderately glossy

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9. Corolla *mauve to pinkish*, 7-12 mm. long; style *manifestly protruding* beyond anthers; berry with *matt surface*, usually bearing up to 4 stone cells (downy or silky,  $\pm$  woody, diploid perennials 1-4 ft.) 11

Corolla *white*, 3-6 mm. long; style *hardly protruding* beyond anthers which are mostly 2-3 mm. long; berry  $\pm$  *glossy*, lacking stone cells; seeds 1.7-2.0 mm. long 10

10. Leaves *dark green*, almost *flat*; calyx *glabrous* or nearly so, not appreciably enlarging *nor* applied closely to berry (almost glabrous hexaploid annual of very wide range):

\**S. nigrum* L. *Spec. Plant.* 1: 186 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 105, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1065 A (1957)—flower; Butcher, *New ill. Brit. Flor.* 2: fig. 1007 (1961); Ross-Craig, *Drawings Brit. Plants* 21: t. 29 (1965); Hutchinson, *Common Wild Flowers* t. 151 (1946); Matthews, *N.Z. J. Agric.* 101: 121, col. (1960); Baylis, *Trans. roy. Soc. N.Z.* 85: t. 25 opp. 382 fig. 3, 4, 6, 7 (1958); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 232 fig. 2, col. (1927); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2019, col. (1926).

*Vern.*: Black Nightshade. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., Cent. Aust., N.Z.

—Leaves *yellow-green*, the halves of blade tending to become *conduplicate*; calyx *glandular-hairy*, membranous and strongly accrescent ( $\pm$  8 mm. diam.) in fruit, its lobes closely embracing the berry and extending for half the length of latter (clammy annual beset with fine multicellular hairs mixed with glands, sporadic in a few central districts including Melbourne suburbs):

\**S. nitidibaccatum* G. Bitter in Fedde *Repert. Spec. nov. Regn. veg.* 11: 208 (1912).

*Vern.*: Nightshade. *Distr.*: JN—also Tas.

11. Style exceeding anthers by 1.5-3.0 mm. (long-protruding); anthers 2.5-4.0 mm. long; seeds  $\pm$  1.5 mm. long (in shade of coastal shrubberies on Port Phillip Bay and uncommon):

\**S. douglasii* Dunal in *DC. Prodr.* 13<sup>1</sup>: 48 (1852).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4496 (1951); Robbins, Bellue & Ball, *Weeds Calif.* fig. 250 (1941).

*Vern.*: Douglas's Nightshade. *Distr.*: P.

—Style exceeding anthers by only 0.5-1.0 mm.; anthers  $\pm$  2.0 mm. long; seeds 1.2-1.5 mm. long (Mitchell R. cliffs just north of Bairnsdale and rare):

\**S. ottonis* Hylander in *Uppsala Univ. Årsskr.* n. 7: 279 (1945).

*S. gracile* Dunal in *DC. Prodr.* 13: 54 (1852), non Sendt. in Mart. (1846).

*Vern.*: Nightshade. *Distr.*: W.

12. Prickles *conspicuous* on branches, foliage and calyces 15  
Prickles absent or few and scattered on stems, with very few or none on calyces; corolla violet or purplish, 2-3 cm. broad 13
13. Leaves mostly >1" wide, *glabrous* on upper-side, tomentose underneath; prickles (if developed) 5-10 mm. long; flowers 6-10 in large racemose cymes; corolla-lobes *obtuse* (very rare shrub 3-6 ft. tall in far eastern jungle, at Mt. Drummer—perhaps now extinct there?):

*S. violaceum* R. Br. *Prodr. Flor. Nov. Holl.* 445 (1810).

*Vern.*: Violet Nightshade. *Distr.*: Z—also N.S.W., Qd.

—Leaves up to 1" wide, finely *stellate-hairy* on both surfaces; prickles (when present) <4 mm. long; flowers <6 together; corolla-lobes *acute*; berry yellow, 10-15 mm. diam. (not known farther east than Gippsland Lakes) 14

14. Plant 1-3 ft. tall, with *silvery* indumentum; peduncles *short and stout*; fruiting calyx hardly accrescent, *not* embracing berry; seeds *rotund*, 3-4 mm. diam. (widely scattered weed):

\**S. elæagnifolium* Cav. *Icon. & Descr. Plant.* 3: 22, t. 243 (1794).

*Illust.*: Cavanilles (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1067 (1957); Tideman, *J. Dep. Agric. S. Aust.* 63: 329-331 (1960); Abrams, *Ill. Flor. Pacific States* 3: fig. 4504 (1951); Harris in Robbins, Bellue & Ball, *Weeds Calif.* t. opp. 344, col. (1941); Georgia, *Manual Weeds* fig. 256 (1919).

*Vern.*: Silver-leaf Nightshade (White Horse Nettle; Tomato Weed—S.A.). *Distr.*: ABCGMNPRV—also S.A., N.S.W.

—Plant *sprawling*, <1 ft. tall, with hoary *greyish* indumentum; peduncles often *long and slender* (to 2"); fruiting calyx *accrescent*, as long as and *embracing the berry*; seeds *elliptic*,  $\pm$  2 mm. long (Mallee, Wimmera and northern plains):

*S. esuriæ* Lindl. in *Mitch. Three Exped. E. Aust.* 2: 43 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 105, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1065 D (1957); Hope in Bailey & Gordon, *Plants poison. & injur. Stock* t. opp. 5 (1887).

*Vern.*: Quena. *Distr.*: ABCFGHJLMR—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

15. Flowers *yellow*, with 1 petal and 1 anther *longer than* the other 4; fruiting calyx very densely covered with yellowish spines (5-15 mm. long),

much enlarged and *enclosing the berry*; leaves pinnatipartite, with rounded lobes, coarsely stellate-hairy but green on both surfaces (annual weed, 1-2 ft., in drier W., N.W. & N. districts, also at Alexandra and Maffra):

\**S. rostratum* Dunal *Hist. nat. Solanum* 234, t. 24 (1813).

*Illust.*: Dunal (*l.c.*); Richardson, *J. Dep. Agric. S. Aust.* 56: 449-50 (1953); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 60, col. (1958); Maiden, *Weeds N.S.W.* 75 (1920); Clarke, *Bull. Dep. Agric. S. Aust.* n. 406: 87, 88 (1949); Abrams, *Ill. Flor. Pacific States* 3: fig. 4503 (1951); Robbins, Bellue & Ball, *Weeds Calif.* fig. 254 (1941); Georgia, *Manual Weeds* fig. 257 (1914).

*Vern.*: Buffalo Burr. *Distr.*: BCJMRS—also W.A., S.A., N.S.W., Qd.

—Flowers *not* yellow (mostly purplish), the 5 petals and 5 stamens respectively *equal*; fruiting calyx shorter than and *not enclosing the berry* (shrubby perennials) 16

16. Plant <1 ft. tall, with *red* prickles; leaves <1" wide, deeply pinnatifid; berry yellow,  $\pm$  1 cm. diam. (extremely rare riverine semi-shrub of far N.W. Mallee):

*S. lacunarium* F. Muell. in *Trans. phil. Soc. Vict.* 1: 18 (1855).

*Vern.*: Lagoon Nightshade. *Distr.*: A (Walpolla Id)—also S.A., N.S.W.

—Plants >1 ft. tall, with *pale yellowish* prickles; leaves mostly >1" wide; berry >1 cm. diam. (absent from far N.W.) 17

17. Leaves *greenish* on both surfaces; stems with only scattered hairs; berries at first mottled with green and white; corolla violet 19

Leaves *whitish-tomentose* on under-side, sinuate-lobed; stems with a dense white or greyish indumentum (shrubs 3-5 ft.) 18

18. Upper surface of leaf *white-edged* from the persisting indumentum; spines *coarse*, 1.0-1.5 mm. wide at base; corolla 25-30 mm. wide, white with blue mid-vein to each lobe (occasional weed in Colac, Melbourne and San Remo districts):

\**S. marginatum* L. f. *Suppl. Plant.* 147 (1781).

*Illust.*: Curtis's *bot. Mag.* 44: t. 1928, col. (1817); Abrams, *Ill. Flor. Pacific States* 3: fig. 4505 (1951).

*Vern.*: White-edged Nightshade. *Distr.*: KNP—also Tas., N.Z.

—Upper surfaces of leaves *never* white-edged; spines *slender*, <1 mm. wide at base; corolla 20-25 mm. wide, *purple* (central-northern districts between Inglewood, Benalla and Mansfield, where introduced from inland N.S.W.):

\**S. cinereum* R. Br. *Prodr. Flor. Nov. Holl.* 446 (1810).

*Vern.*: Narrawa Burr. *Distr.*: HMNRS—also S.A., N.S.W., A.C.T., Qd.

19. Leaves thickish, sinuately *pinnatifid to bipinnatifid*, with *blunt rounded lobes*; spines *coarse*, >1 mm. wide at base; corolla 25-30 mm. wide;

berry finally 20-25 mm. diam. (scattered in southern, near-coastal districts between Port Fairy and Bairnsdale):

\**S. sodomæum* L. *Spec. Plant.* 1: 187 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1071 (1957); Ewart, *Flor. Vict.* fig. 326 (1931)—fruit; Wall in Clarke, *Bull. Dep. Agric. S. Aust.* n. 406: t. opp. 7, col. (1949), as var. *hermannii*; Wauer in Ewart, *Weeds . . . Vict.* t. opp. 44, col. (1909); Coste, *Flor. Franc.* 2: fig. 2622 (1903).

*Vern.*: Apple of Sodom. *Distr.*: ENPW—also W.A., S.A., N.S.W., Qd, N.Z.

—Leaves  $\pm$  membranous, coarsely and *acutely lobed* or toothed, *not pinnatifid*; spines very *slender*, <0.5 mm. wide at base; corolla 15-25 mm. wide; berry 12-20 mm. diam. (cooler S.E. districts between Dandenong Ranges and N.S.W. border) 20

20. Foliage virtually *glabrous* (with very minute, widely scattered stellate hairs),  $\pm$  lustrous; spines *numerous and close* on branches; lobes of fruiting calyx *long-acuminate*, almost *as long as* berry (widespread through moist forest-land, extending into mountains):

*S. prinophyllum* Dunal in *DC. Prodr.* 13<sup>1</sup>: 296 (1852).

*S. xanthocarpum* sens. Ewart *Flor. Vict.* 1005 (1931) atque auctt. divers.; *non* Schrad. & J. Wendl. (1795);

*S. armatum* R. Br. *Prodr. Flor. Nov. Holl.* 446 (1810), *non* Forsk. (1775).

*Vern.*: Forest Nightshade. *Distr.*: NSTWZ—also N.S.W., Qd.

—Foliage shortly but *distinctly pubescent*, dull; spines *few and widely scattered* along branches; lobes of fruiting calyx shortly acuminate,  $\pm$  *half as long as* berry (restricted to near-coastal tracts of E. Gippsland, eastward from Lake Wellington):

*S. pungetium* R. Br. *Prodr. Flor. Nov. Holl.* 446 (1810).

*Vern.*: Eastern Nightshade. *Distr.*: WZ—also N.S.W., Qd.

[Ewart, *Flor. Vict.* 1006 (1931) recorded *S. pungetium* from Walwa in the far N.E.; but the small specimen (Jan. 1930) had been misidentified, differing from *S. pungetium* in its racemose inflorescence and lack of long prickles on the calyces.

During 1961 a small but very persistent infestation of the inland Australian *S. petrophilum* F. Muell. was found in the Charlton district, but information is lacking on its continued survival (or possible extension) there. This extremely spiny low shrub, with attractive purple flowers ( $\pm$  3 cm. wide) and accrescent calyces, is noteworthy for its *whitish bony* fruits (10-15 mm. diam.).

The ubiquitous garden Potato, *Solanum tuberosum* L., occasionally persists by tubers on farmlands, in vegetable plots and about rubbish tips, but can hardly be considered spontaneous anywhere. This South American Andean species is too familiar to need any description, and a popular historical account (with colour plate by Else Bostelmann) may be consulted in V. R. Boswell's "Our Vegetable Travelers, *Natn. geogr. Mag.* 96<sup>1</sup>: 156-57 (Aug. 1949). An important taxonomic paper is "A Revision of the Tuber-Bearing Solanums" ed. 2, by J. G. Hawkes in *Scott. Plant Breeding Stn Rec.* 77-181 (1963).]

## \*SALPICHROA Miers in Hook. (1845)

\**S. origanifolia* (Lam.) Baill. *Hist. Plant.* 9: 288, 337 (1888).*Physalis origanifolia* Lam. *Tabl. encycl.* 2: 28 n. 2398 (1793);*S. rhomboidea* (Gillies & Hook., ut *Atropa* sp., 1829) Miers in Hook.*Lond. J. Bot.* 4: 326 (1845).*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1076 (1957); Ewart, *Flor. Vict.* fig. 327 (1931); Abrams, *Ill. Flor. Pacific States* 3: fig. 4488 (1951); Robbins, Bellue & Ball, *Weeds Calif.* fig. 248 (1941); *Garden* 35: 367 (1889)—all as *S. rhomboidea*.*Vern.*: Pampas Lily-of-the-Valley. *Distr.*: CDHJKNPRW—also S.A., N.S.W., A.C.T.

## \*DATURA L. (1753)

1. Leaves to 3" long, grey-pubescent, almost entire; corolla usually 10-toothed; fruit nodding, globular, with very numerous slender prickles, opening irregularly; seeds pale (far N.W. to nearer N.E. at Dookie):

\**D. innoxia* Mill. *Gdnrs Dict.* ed. 8: n. 5 (1768).*D. metel* sens. Ewart *Flor. Vict.* 997 (1931), atque auctt. Aust. plur., non L. (1753).*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1081 (1957); *Curtis's bot. Mag.* 35: t. 1440, col. (1812); Koppel, *Flor. Israel* t. [124] (1956); Gardner in Meadly, *Weeds W. Aust.* 135 fig. c (1965); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2023, col. (1926)—all as *D. metel*.*Vern.*: Recurved Thorn-apple. *Distr.*: AGHMNR—also W.A., S.A., N.S.W., Qd.

—Leaves usually >3" long, glabrous or almost so, irregularly and sinuately toothed; corolla 5-lobed; fruit erect, ovoid, opening in 4 valves; seeds blackish

2. Spines of fruit rather few, quite unequal, the upper very stout and 1-2 cm. long; corolla 4-6 cm. long, 2-3 cm. wide (scattered in N.W. & N., with isolated record for Wonthaggi):

\**D. ferox* L. *Amæn. acad.* 3: 403 (1756).*Illust.*: Gardner, *Toxic Plants W. Aust.* 169 fig. A (1956); Gardner in Meadly, *Weeds W. Aust.* 135 fig. A (1965); White, *Qd agric. J.* new ser. 8: 33 t. 2 (1917); Abrams, *Ill. Flor. Pacific States* 3: fig. 4509 (1951); Fiori & Paoletti, *Icon. Flor. Ital.* 338 (1902).*Vern.*: Long-spine Thorn-apple. *Distr.*: BGMNRT—also W.A., Tas., N.S.W.

—Spines of fruit numerous, subequal but rather shorter toward base, none >1 cm. long; corolla 6-10 cm. long, 3-4 cm. wide (scattered throughout State):

\**D. stramonium* L. *Spec. Plant.* 1: 179 (1753).*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 104 (1965); Everist, *Common Weeds Farm & Pasture* 59 (1957); Gardner, *Toxic Plants W. Aust.*



167 fig. A-E, 169 fig. B (1956); Gardner in Meadly, *Weeds W. Aust.* 132 col., 134 & 135 fig. B (1965); Grosse in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 146 (1958); Ewart, *Flor. Vict.* fig. 324 (1931); Butcher, *New ill. Brit. Flor.* 2: fig. 1008 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4508 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 54: t. 233 fig. 2, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2022, col. (1926); Burbidge, *Flor. Aust. Cap. Terr.* fig. 323 (1970).

*Vern.*: Common Thorn-apple (Jimson Weed—Calif.) *Distr.*: CDFGJKMNPR VWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[The var. *tatula* (L., *ut sp.*) Torrey *Flor. N. Mid. U.S.* 232 (1824) differs in its pigmentation, having stems, petioles and corolla variously suffused with purple. It was figured, as *D. tatula*, by C. T. White in *Qd agric. J. new ser.* 8: 32 t. 1 (1917), also by Poinso in Bonnier's *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2022 (2nd.), col. (1926).

The Peruvian shrub or small tree *D. arborea* L. ("Floripondio") has large entire leaves and numerous, pendulous, highly fragrant white flower-bells 6-9" long; it is frequently grown for ornament in Australian gardens, and the fruit (when formed) is not spiny.]

### \*CESTRUM L. (1753)

\**C. parqui* L'Hérit. *Stirp. nov. fasc.* 4: 73 (1788).

*Illust.*: Curtis's *bot. Mag.* 42: t. 1770, col. (1815); Everist, *Common Weeds Farm & Pasture* fig. 71 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 59, col. (1958); Everard, *Wild Flowers World* t. 183 fig. E, col. (1970).

*Vern.*: Green Poison-berry. *Distr.*: NR—also N.S.W., Qd.

### NICOTIANA L. (1753)

1. Plants >3 ft. high, glaucous or viscid; corolla-limb yellow, pink or red; filaments of all stamens inserted near base of corolla-tube (weeds and escapes from cultivation) 5  
Plants normally <3 ft. high, neither glaucous nor viscid; corolla-limb white or pale greenish (at least on inner surface); filaments of 4 stamens short, affixed near summit of corolla-tube 2
2. Plants pubescent or velvety, with copious soft woolly hairs on all parts 4  
Plants glabrous or almost so (occasionally with some loose hairs on lower portion of stems, and always ± glandular-hairy on the flowers) 3
3. Corolla-tube 2-4.5 cm. long, broad in proportion to length (3-5 mm. wide at top of calyx, the limb 8-15 mm. wide; seeds slightly curved (widespread, usually in rocky places):

*N. suaveolens* Lehm. *Gen. Nicot. Hist.* 43 (1818).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 219, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 135 (1967); Nicholls, *Vict. Nat.*

53: t. 7 fig. D opp. 64 (1936); *Curtis's bot. Mag.* 18: t. 673, col. (1803), as *N. undulata*; Bishop, *Wild Life (Melb.)* 3: 115 (1941); Bloss in Goodspeed, *Genus Nicotiana* 458 fig. 105 (1954).

*Vern.*: Austral Tobacco. *Distr.*: DHJNPVWZ—also S.A., N.S.W.

—Corolla-tube <2 cm. long, *slender* (<3 mm. wide at top of calyx), the limb <5 mm. wide; seeds much-curved, C-shaped (near Murray R. in far N.W. Mallee):

*N. goodspeedii* H. Wheeler in *Univ. Calif. Publ. Bot.* 18: 63 (1935).

*Illust.*: Bloss in Goodspeed, *Genus Nicotiana* 474 fig. 112 (1954).

*Vern.*: Small-flower Tobacco. *Distr.*: AF—also W.A., S.A., N.S.W.

4. Leaves narrowed below into short *wingless petioles*; corolla *twice as long* as calyx, the limb 4-6 mm. wide; seeds *strongly curved*, with *serpentine reticulations* (Mallee plant):

*N. velutina* H. Wheeler in *Univ. Calif. Publ. Bot.* 18: 55 (1935).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 185, col. (1968); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1086 (1957); Mahood in Chippendale, *Poison Plants N. Terr.* Ext. Art. n. 2 pt III: fig. 43 (1960); Bloss in Goodspeed, *Genus Nicotiana* 464 fig. 107 (1954).

*Vern.*: Velvet Tobacco. *Distr.*: ABCF—also S.A., Cent. Aust., N.S.W., Qd.

—Leaves sessile or with winged petioles; corolla *half as long again* as calyx, the limb 5-9 mm. wide; seeds only *slightly curved*, but with sharply raised *honeycomb-like reticulations* (rare coastal plant—perhaps extinct in Victoria?):

*N. maritima* H. Wheeler in *Univ. Calif. Publ. Bot.* 18: 56 (1935).

*Illust.*: Bloss in Goodspeed, *Genus Nicotiana* 462 fig. 106 (1954).

*Vern.*: Coast Tobacco. *Distr.*: NP—also W.A., S.A.

[Victorian records consist of two old collections from Port Phillip region, the last made at Studley Park, Kew, in Jan. 1883. No further occurrences have been noted this century.]

5. Leaves *glabrous*,  $\pm$  *glaucous*, thickish, on *wingless petioles*; corolla-limb *yellow*, 3-5 mm. wide, *obscurely lobed*; seeds angular, *honeycomb-reticulate* (soft-wooded shrub or small tree to 15 ft. high, chiefly in Mallee):

\**N. glauca* R. Graham in *Edinb. new philos. J.* 5: 175 (1828).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1082 (1957); Nicholls, *Vict. Nat.* 53: t. 7 fig. A opp. 64 (1936); *Curtis's bot. Mag.* 55: t. 2837, col. (1828); King in Hurst, *Poison Plants N.S.W.* 365 (1942); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 147 (1958); Bloss in Goodspeed, *Genus Nicotiana* 334 fig. 59 (1954); Abrams, *Ill. Flor. Pacific States* 3: fig. 4511 (1951).

*Vern.*: Tree Tobacco. *Distr.*: ABCDFGHJNR—also W.A., S.A., N.S.W., Qd. Cent. Aust.

[In *Vict. Nat.* 53: 64, t. 7 fig. B (1936), W. H. Nicholls described *N. flindersiensis*—a natural hybrid between *N. glauca* and the indigenous *N. suaveolens*, occurring on Flinders Peak in the You Yangs.]

—Leaves *clammy-viscid*, stem-clasping and decurrent or with *broadly winged petioles*; corolla-limb pink or red (sometimes white), 10-15 mm. wide, *prominently lobed*; seeds subglobose, with *fluted ridges* (annual or limited herbaceous perennial 3-9 ft. tall, much grown commercially along Ovens Valley etc. of N.E. Victoria but hardly persisting outside cultivation plots):

\**N. tabacum* L. *Spec. Plant.* 1: 180 (1753).

*Illust.*: Blos in Goodspeed, *Genus Nicotiana* 374 fig. 74 (1954); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 233 fig. 3, col. (1927); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2028, col. (1926); Coste, *Flor. Franc.* 2: fig. 2634 (1903); Britton, *Flor. Bermuda* 341 (1918); Wettstein in Engler, *Natürl. Pflfam.* IV 3b: 33 fig. 15 D-J (1895).

*Vern.*: Tobacco. *Distr.*: M (sporadic)—also Qd.

[The perennial Argentinian herb. *N. sylvestris* Spegaz. & Comes, appeared as a weed at Heathcote in Mar. 1960, but has not been found spontaneously since then; it attains 3-6 ft. in height, has viscid leaves 8-20" long and long-tubular white flowers 2-4" in length.]

#### ANTHOCERCIS Labill. (1806)

1. Leaves *glabrous* or nearly so, *flat*, mostly 1-3" long (and 8-20 mm. wide); calyx *glabrous*, the lobes bluntly triangular; corolla-limb >1 cm. wide, whitish and streaked inside (slender shrub of 2-4 ft., in N. & W. Grampians and Mt. Arapiles, with disjunct occurrence on Wentworth R. in Gippsland):

*A. frondosa* (Miers) J. M. Black *Flor. S. Aust.* 504 (1926).

*Cyphanthera frondosa* Miers in *Ann. & Mag. nat. Hist.* ser. 2, 11: 376 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 83, col. (1968).

*Vern.*: Large-leaf Ray-flower. *Distr.*: CDW—also ?S.A., N.S.W.

—Leaves *hairy*,  $\pm$  *recurved* at margins, <1" long (and <8 mm. wide); calyx *hairy*; corolla-limb <1 cm. wide

2. Indumentum of short, *simple glandular hairs*; leaves mostly <8 mm. long; flowers *solitary*; corolla-lobes *ovate, bluntish*, as long as tube (semi-shrub to 1 ft. high, on Mallee sand-hills N. from Yanac & Jeparit):

*A. myosotidea* F. Muell. in *Trans. phil. Soc. Vict.* 1: 20 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 173, col. (1968); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1088 (1957).

*Vern.*: Small-leaf Ray-flower. *Distr.*: ABC—also S.A., N.S.W.

—Indumentum of whitish *stellate hairs*; leaves 8-20 mm. long; flowers in clusters of 2-3; corolla-lobes *lanceolate, acute*, longer than tube (rare hoary shrub 2-4 ft. tall, on dry rocky slopes of far N.E. and far E.—Snowy R. gorge and Mt. Stradbroke):

*A. albicans* A. Cunn. in *Field Geogr. Mem. N.S.W.* 335 (1825).

*Illust.*: Sweet; *Flor. aust.* t. 16, *col.* (1827).

*Vern.*: Hoary Ray-flower. *Distr.*: VW—also N.S.W., Qd.

[European *Hyoscyamus albus* L. (White Henbane) appeared at Shelford on the Leigh R. (Sept. 1882) and at Williamstown (Oct. 1913), but has apparently failed to persist anywhere since then; Ewart's statement, *Flor. Vict.* 1008 (1931), that it is "widely spread in Victoria" is quite misleading. In Melbourne Herbarium is a collection of *H. niger* L. (Common Henbane) made at Merrigum near Kyabram in Oct. 1925; this appearance was also transitory, but the species is recorded as an occasional weed in S.A. and Tas. *H. albus* has downy-velvety foliage, calyx-tubes 15-20 mm. long with *shortly triangular* teeth and a narrow-limbed corolla without veinings; *H. niger* is much less hairy, with smaller calyx-tubes but *long-acuminate* teeth and a very wide-limbed yellow corolla *reticulately veined* with purple—see illustration in Hegi, *Flor. Mittel-Eur.* 5<sup>4</sup>: t. 232 fig. 1, *col.* (1927).]

### Family SCROPHULARIACEÆ

1. Corolla-tube sometimes  $\pm$  pouched at base, but *never spurred* 4  
Corolla-tube with a *distinct spur* at the base 2
2. Plant *erect, glabrous* or nearly so, with *linear to lanceolate* leaves  
\**Linaria* (p. 562)  
Plant *prostrate, often trailing*, the leaves *ovate to orbicular* or reniform and sometimes hastate; capsule globose 3
3. Stems and foliage *glabrous*; leaves *orbicular-reniform, long-petiolate, palmately veined*; corolla (excluding spur) 7-10 mm. long, *lilac*; capsule opening by 2 pores, each with 3 teeth (long-trailing perennial, rooting in moist shaded places) \**Cymbalaria* (p. 563)  
Stems and foliage *villous*; leaves *ovate to  $\pm$  orbicular*, often hastate, *shortly petiolate, pinnately veined*; corolla (excluding spur) <7 mm. long, *yellow-and-purplish*; capsule opening by 2 pores, each with a caducous lid (decumbent annuals) \**Kickxia* (p. 563)
4. Corolla *4-lobed, rotate*, white to mauve or blue; stamens 2; leaves opposite \**Veronica* (p. 568)  
Corolla *5-lobed or 2-lipped*, if ever 4-lobed then stamens >2 5
5. Corolla distinctly 2-lipped or with lobes shorter than tube 9  
Corolla almost *regular*, the lobes at least *as long as tube* 6
6. Flowers <0.5 cm. wide, *whitish or mauve* (creeping or matted, pygmy glabrous plants of damp ground, the leaves *radical or opposite*) 8  
Flowers >1.0 cm. wide, mostly *yellow* (erect plants >1 ft. high, with *alternate leaves*) 7
7. Stamens 5; calyx-lobes *entire* \**Verbascum* (p. 561)  
Stamens 4; calyx-lobes *serrate* \**Celsia* (p. 562)

8. Calyx 5-lobed; style *contracting* into a *capitate stigma*; capsule globular, *septicidal* (often stoloniferous) *Limosella* (p. 565)  
 Calyx 3- or 4-lobed; style *dilated upwards* into a *flattened, curved, bearded stigma*; capsule *loculicidal* *Glossostigma* (p. 564)
9. Perfect stamens 4 11  
 Perfect stamens 2 10
10. Corolla *white or pink*, with *broad tube* <15 mm. long, the 2 lower stamens reduced to staminodes (low weak herbs of damp places, the leaves all *opposite, sessile* and often  $\pm$  stem-clasping; capsule  $\pm$  globular, *not exceeding calyx*) *Gratiola* (p. 565)  
 Corolla *yellow*, with very *narrow slender tube* 15-20 mm. long, the 2 upper stamens with small or barren anthers (erect pubescent annual of sandy ground in far W., the upper leaves *alternate* and lower ones *petiolate*; capsule *exceeding calyx*) \**Zaluzianskya* (p. 567)
11. Leaves entirely *radical*, obovate-oblong,  $\pm$  sinuate; corolla purplish, with white or yellow throat; capsule shorter than campanulate calyx; scape exceeding leaves (swampy near-coastal sites) *Mazus* (p. 567)  
 Leaves present *along stems* 12
12. Flowers in terminal bracteate *spikes or racemes*; lateral lobes of corolla *overlapping* the upper lip in bud stage 15  
 Flowers *solitary* in leaf-axils; lateral lobes of corolla *overlapped* in bud by the upper lip 13
13. Corolla slightly *pouched* at base, pink, 10-15 mm. long (glandular-hairy annual  $\pm$  1 ft. high, the capsule *opening by pores*; recorded only from Wodonga district) \**Antirrhinum* (p. 562)  
 Corolla *never* pouched; capsule *not* opening by pores 14
14. Calyx *tubular and 5-toothed*; capsule 2-valved, ovoid, enclosed in calyx; 2 loculi of anther finally *confluent* *Mimulus* (p. 566)  
 Calyx *deeply divided* into 5 lanceolate segments; capsule 4-valved, acuminate, about as long as calyx; 2 loculi of anther remaining quite *separate* and each shortly *stipitate*; corolla purple (erect perennial 1-3 ft. high, in N. & far W.) *Morgania* (p. 566)
15. Calyx of 5 *separate sepals*; corolla 4-5 cm. long, bell-shaped, white to mauve or purple and spotted inside (downy biennial 2-5 ft. tall; lower leaves petiolate, crenate, 6-12" long) \**Digitalis* (p. 572)  
 Calyx 4-toothed or -lobed; corolla <3 cm. long (plants <2 ft. high) 16
16. Loculi of anthers very *unequal* (one attached at middle, the other hanging from its upper end); seeds *reticulate*; upper lip of corolla bilobed (hairy parasitic annuals with deeply divided leaves and multi-coloured flowers in dense spikes with conspicuous, often purplish bracts) \**Orthocarpus* (p. 572)  
 Loculi of anthers *equal*; seeds smooth or ribbed 17
17. Upper lip of corolla *2-lobed, spreading* or  $\pm$  recurved; capsule *oblong, slightly compressed*; seeds *ribbed* *Euphrasia* (p. 572)  
 Upper lip of corolla *entire* or slightly emarginate, *forming a hood* and never spreading (viscid- or glandular-hairy annuals) 18
18. Calyx-lobes *equal, lanceolate*; corolla yellow or purple; capsule *lanceolate*; seeds *smooth* \**Parentucellia* (p. 574)

Calyx-lobes *unequal, ovate*; corolla *pale pinkish*; capsule  $\pm$  *globular*; seeds *vertically ribbed*, with wrinkles in the furrows

\**Bellardia* (p. 575)

\***VERBASCUM L. (1753)**

1. Plant wholly *white-tomentose* with a thick, velvety, stellate indumentum; leaves *entire*, the bases with *long-decurrent wings* on stem; flowers *subsessile*, crowded in a dense bracteate spike 2-4 cm. wide; hairs on staminal filaments white or yellowish; capsule *ovoid*, 1 cm. long or more:

\**V. thapsus* L. *Spec. Plant.* 1: 177 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 1 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1009 (1961); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 145 (1958); King in Carn, *Control of Weeds* (N.S.W.) 49 (1939); Abrams, *Ill. Flor. Pacific States* 3: fig. 4637 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6: fig. 7 & 8 (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2031, col. (1926); Coste, *Flor. Franc.* 2: fig. 2638 (1903).

*Vern.*: Great Mullein. *Distr.*: JNPTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Plant *green*, the hairs (when present) *simple and glandular* leaves *toothed or crenate, hardly decurrent*; flowers *pedicellate*, rather loosely arranged on a spike <2.5 cm. wide; hairs on stamens often purplish; capsule *globular*, <1 cm. long

2. Leaves and spikes manifestly *pubescent*; flowers usually >1 per bract (sometimes up to 6), on *stout pedicels* 3-6 mm. long (widespread):

\**V. virgatum* Stokes in With. *Bot. Arr. Veg. Brit. Isles* ed. 2, 1: 227 (1781).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1090 (1957); Butcher, *New ill. Brit. Flor.* 2: fig. 1014 (1961); Ross-Craig, *Drawings Brit. Plants* 22: t. 2 (1966); Davey, *J. Dep. Agric. Vict.* 20: 85, 86 (1922), as *V. blattaria*; Abrams, *Ill. Flor. Pacific States* 3: fig. 4635 (1951); Coste, *Flor. Franc.* 2: fig. 2646 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 328 (1970).

*Vern.*: Twiggy Mullein. *Distr.*: BCDEJKMNRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Leaves and spikes *glabrous* or nearly so; flowers solitary (rarely 2 per bract), on *slender pedicels* 7-15 mm. long (rare biennial of Melbourne region & Plenty R. gorge):

\**V. blattaria* L. *Spec. Plant.* 1: 178 (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 2: fig. 1013 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4634 (1951); Robbins, Bellue & Ball, *Weeds Calif.* fig. 261 (1941); Hegi, *Ill. Flor. Mittel-Eur.* 6: fig. 1 (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2034, col. (1926); Coste, *Flor. Franc.* 2: fig. 2647 (1903).

*Vern.*: Moth Mullein. *Distr.*: N—also Tas., N.S.W., Qd, N.Z.

## \*CELSIA L. (1753)

\**C. cretica* Murr. *Syst. Veg.* ed. 13: 470 (1774).

*Illust.*: Curtis's *bot. Mag.* 24: t. 964, *col.* (1806); Payne in Bailey, *Weeds & susp. poison. Plants* Qd fig. 223 (1906); Coste, *Flor. Franc.* 2: fig. 2648 (1903).

*Vern.*: Cretan Mullein. *Distr.*: DE—also S.A., Tas., Qd, N.Z.

## \*ANTIRRHINUM L. (1753)

\**A. orontium* L. *Spec. Plant.* 2: 617 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1091 (1957); Ross-Craig, *Drawings Brit. Plants* 22: t. 13 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1016 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 236 fig. 2, *col.* (1915); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2047, *col.* (1926); Coste, *Flor. Franc.* 3: fig. 2667 (1906).

*Vern.*: Lesser Snapdragon (Corn Snapdragon). *Distr.*: R (Wodonga)—also W.A., N.S.W., Qd, N.Z.

## \*LINARIA Mill. (1754)

1. Corolla (excluding spur) 15-25 mm. long, *yellow*; sepals ovate-lanceolate; capsule *ovoid*, > twice as long as calyx; seeds winged and *papillose* (glaucous perennial 1-2 ft. high, with dense racemes; Warragul S.A., district):

\**L. vulgaris* Hill. *Brit. Herb.* 109 (1756).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 12 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1019 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4760 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 235 fig. 4, *col.* (1915); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2059, *col.* (1926); Coste, *Flor. Franc.* 3: fig. 2691 (1906).

*Vern.*: Common Toad-flax. *Distr.*: T—also Tas., N.S.W., N.Z.

—Corolla (excluding spur) <15 mm. long, *purple or bluish*; capsule ± *globular*, never much exceeding calyx (annuals with few flowers in elongating racemes)

2. Sepals *linear-lanceolate*, acuminate; corolla (excluding spur) 8-15 mm. long, *purple*; capsule *shorter than calyx*; seeds flat, *tuberculate on one face* (very widespread weed):

\**L. pelisserana* (L.) Mill. *Gdnrs Dict.* ed. 8: n. 11 (1768).

*Antirrhinum pelisserianum* L. *Spec. Plant.* 2: 615 (1753).

*Illust.*: Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2063, *col.* (1926); Coste, *Flor. Franc.* 3: fig. 2686 (1906)—both as *L. Pelliceriana*; Reichenbach, *Icon. Flor. germ.* 20: t. 1683 fig. I, *col.* (1861); Burbidge, *Flor. Aust. Cap. Terr.* fig. 329 (1970).

*Vern.*: Pelisser's Toad-flax. *Distr.*: AJMNPRSVW—also N.S.W., A.C.T., ?S.A.

—Sepals *oblanceolate*; corolla (excluding spur) <8 mm. long, pale *blue to pinkish*; capsule shortly *exceeding calyx*; seeds flat, very wide-winged (2 mm. diam.) with very *minute tubercles near centre of both faces* (along Snowy R., East Gippsland):

\**L. arvensis* (L.) Desf. *Flor. atlant.* 2: 45 (1798).

*Antirrhinum aryense* L. *Spec. Plant.* 2: 614 (1753).

*Illust.*: Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2070, *col.* (1926); Coste, *Flor. Franc.* 3: fig. 2700 (1906); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 10 (1915); Reichenbach, *Icon. Flor. germ.* 20: t. 1683 fig. III, *col.* (1861).  
*Vern.*: Corn Toad-flax. *Distr.*: W—also N.S.W., A.C.T.

[Ewart, *Flor. Vict.* 1013 (1931) records the European *L. versicolor* Mœnch as "widely spread in Victoria", citing occurrences at Newstead (1910) and St. Arnaud (1916). The only Victorian collection in Melbourne Herbarium came from Red Jacket Creek near Aberfeldy (1873) and could have been garden-grown—a possibility heightened by the presence at Melbourne Herbarium of a sample of European *L. italica* Trev., also forwarded from Red Jacket Ck (1874) by the same contributor. *L. versicolor* has not been observed in the State during the past half-century and is presumed to have been a transitory introduction; it is close to *L. vulgaris*, differing in the variegated flowers. In Oct. 1960 a small occurrence of North African *L. reticulata* (Sm.) Desf. var. *aureo-purpurea* Hort. was noted along a roadside near Horsham; this handsome annual has congested golden-yellow flowers veined with purple.]

#### \*CYMBALARIA Hill (1756)

\**C. muralis* P. Gärtn. et al. *Oek-techn. Flor. Wett.* 2: 397 (1800).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 6 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1025 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4763 (1951); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2051, *col.* (1926), as *Linaria cymbalaria*.  
*Vern.*: Ivy-leaf Toad-flax (Kenilworth Ivy—U.S.A.). *Distr.*: DN—also S.A., Tas., N.S.W.

#### \*KICKXIA Dumort. (1827)

Upper (or all) leaves *hastate*; pedicels mostly *glabrous* or villous just beneath the flower; calyx-lobes *lanceolate*; corolla (with straight spur) 8-10 mm. long; seeds *coarsely* and deeply pitted (apparently a widespread weed):

\**K. elatine* (L.) Dumort. *Flor. Belg.* 35 (1827).

*Antirrhinum elatine* L. *Spec. Plant.* 2: 612 (1753);

*Linaria elatine* (L.) Mill. *Gdnrs Dict.* ed. 8: n. 16 (1768).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 7 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1024 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4765 (1951); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2053, *col.* (1926), as *Linaria elatine*.

*Vern.*: Sharp-leaved Fluellen (Hairy Toad-flax). *Distr.*: ACJKMPSRV—also W.A., S.A., Tas., N.S.W., Qd, N.Z.



All the leaves *entire*, rounded or cordate at base; pedicels wholly *villous*; calyx-lobes *ovate*; corolla (with often curved spur) 10-12 mm. long; seeds *finely pitted* (Werribee-Geelong, Eltham and Yarrowonga districts):

\**K. spuria* (L.) Dumort. *Flor. Belg.* 35 (1827).

*Antirrhinum spurium* L. *Spec. Plant.* 2: 613 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 8 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1023 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4764 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 235 fig. 2, col. (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2052, col. (1926), as *Linaria spuria*.  
*Vern.*: Blunt-leaved Fluellen (Hairy Toad-flax). *Distr.*: NR—also W.A., S.A., Tas.

[The Mediterranean *K. commutata* (Bernh. ex Reichenb.) Fritsch and *K. sieberi* Dörf. are both recorded for South Australia, and they may be present also in Victoria. Both are close to *K. elatine*, from which the latter differs in its totally *villous pedicels* and the former in its longer corollas (12-15 mm.) as well as *tuberculate seeds*.]

#### GLOSSOSTIGMA R. Wight & Walk.-Arn. (1836)

Leaf-blade *longer* than petiole; flower-stalk *shorter* than leaves; calyx with 4 short broad lobes; stamens 4 (widespread):

*G. elatinoides* (Benth.) Benth. ex Hook. f. *Flor. N.-Z.* 1: 189 (1853).

*Tricholoma elatinoides* Benth. in *DC. Prodr.* 10: 426 (1846).

*Vern.*: Small Mud-mat. *Distr.*: ABCDEJMNRSTV—also W.A., S.A., Tas., N.S.W., N.Z.

— Leaf-blade *shorter* than and tapering into the long petiole; flower-stalks mostly *as long as* or exceeding leaves; calyx *unequally 3-lobed*, one lobe broader than other two; stamens 4 (Wimmera & Mallee, often ephemeral):

*G. drummondii* Benth. in *DC. Prodr.* 10: 426 (1846).

*Vern.*: Desert Mud-mat. *Distr.*: ACH—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—As for the last, but flower-stalks *shorter* than leaves, and stamens *only 2* (bogs on Forlorn Hope Flat north of Nunniong Plateau, at  $\pm 4000$  ft. alt.):

*G. sp.*

*G. diandrum* sens. Eichler *Suppl. J. M. Black's Flor. S. Aust* (ed. 2): 281 (1965), atque Burbidge & Gray *Flor. Aust. Cap. Terr.* 323, fig. 327 (1970), *non certe* (L.) Kuntze (1891).

*Illust.*: Burbidge (*l.c.*).

*Vern.*: Mountain Mud-mat. *Distr.*: W—also S.A., N.S.W., A.C.T., Qd.

[In *Vict. Nat.* 87: 249-250 (Sept. 1970) the author discussed the nomenclature of this species and concluded that *G. spathulatum* Arnott (1836) was the most acceptable name for it. He has since found that *G. spathulatum* is illegitimate, because *Limosella diandra* L. was cited by Arnott in synonymy.]

## LIMOSELLA L. (1753)

Leaf-blade <4 mm. broad, the petiole up to 3 cm. long (rarely more); flowers on pedicels 1-3 cm. long; corolla often pinkish, *slightly exceeding* calyx (widespread):

*L. australis* R. Br. *Prodr. Flor. Nov. Holl.* 443 (1810).

*L. aquatica* sens. Ewart *Flor. Vict.* 1014 (1931) atque auctt. plur., non L. (1753).

*Illust.*: Ewart & Rees, *Proc. roy. Soc. Vict.* new ser. 26: t. 1 opp. 10 (1913), as *L. aquatica*; Curtis, *Student's Flor. Tasm.* 3: 518 (1967), as *L. lineata*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 326 (1970).

*Vern.*: Austral Mudwort. *Distr.*: ABCDEHJKLMNPVS—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

Leaf-blade 4-8 mm. broad, oblong-elliptic, on *very slender* petioles 3-8 cm. long; flowers *sessile* in the dilated bases of petioles; corolla whitish, *hardly as long as* calyx (far W., N.W. & N. districts and rather uncommon):

*L. curdieana* F. Muell. *Fragm. Phyt. Aust.* 9: 166 (1875).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 10 n. 316 (1965); Eckert, *Vict. Nat.* 10: 130-31 (1893).

*Vern.*: Large Mudwort. *Distr.*: ABCGHMNR—also S.A., N.S.W., Qd.

## GRATIOLA L. (1753)

1. Flowering stems mostly *procumbent*, often rooting; leaves <8 mm. long, *entire* or nearly so; flowers shortly *pedicellate*, the corolla 8-12 mm. long; staminodes present; capsule 3-4 mm. long (subalpine):

*G. nana* Benth. in *DC. Prodr.* 10: 404 (1846).

*Vern.*: Matted Brooklime. *Distr.*: SVW—also Tas., N.S.W., A.C.T., N.Z.

—Flowering stems *erect or ascending*; leaves >8 mm. long, often *denticulate*; capsule 4-6 mm. long (lowland & montane) 2

2. Leaves mostly <1 cm. wide; flowers distinctly *pedicellate* (their stalks usually as long as calyx); staminodes *absent* (W., N.E. and Tambo R.):

*G. pedunculata* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810).

*Vern.*: Stalked Brooklime. *Distr.*: ACDJKNW—also W.A., N.S.W., A.C.T., Qd.

—Leaves >1 cm. wide; flowers mostly *sessile* or nearly so; 2 thread-like staminodes *present* in addition to 2 fertile upper stamens (very widespread in wet places):

*G. peruviana* L. *Spec. Plant.* 1: 17 (1753).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 302, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1089 E (1957); Martius, *Flor. brasil.* 8:

t. 49 fig. II (1862); Burbidge, *Flor. Aust. Cap. Terr.* fig. 331 (1970), as *G. latifolia*.

*Vern.*: Austral Brooklime. *Distr.*: CDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[The name *G. peruviana* is here applied in the sense of most Australian authors; but, as pointed out by Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 280 (1965), revisional work is necessary to demonstrate whether (or not) Australian populations can be equated with true South American *G. peruviana* L. In her *Student's Flor. Tasm.* 3: 517 (1967), W. M. Curtis uses the name *G. latifolia* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810) for the broad-leaved species so frequent in Victoria, as do N. T. Burbidge & Max Gray in their *Flor. Aust. Cap. Terr.* 326 (1970).]

### MORGANIA R. Br. (1810)

*M. glabra* R. Br. *Prodr. Flor. Nov. Holl.* 441 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1095 (1957).

*Vern.*: Blue Rod. *Distr.*: ABCFGHLM—W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

[Victorian occurrences are apparently all referable to the var. *floribunda* (Benth., *ut sp.*) Maiden & Betche *Cens. N.S.W. Plants* 182 (1916), distinguished by its much shorter flower-pedicels (rarely as long as calyx and often obsolete) and more deeply cleft corollas. Ewart, *Flor. Vict.* 1015-'16 (1931), had admitted both *M. glabra* and *M. floribunda* as distinct species; but *M. glabra* var. *glabra* is a more northern population and does not extend to Victoria, contrary to Ewart's recordings for the Sea Lake and Myall districts.]

### MIMULUS L. (1753)

1. Leaves >10 mm. wide; corolla yellow, 15 mm. long or more 4  
    Leaves <7 mm. wide; corolla bluish to mauve or purple, <15 mm.  
    long 2
2. Plant erect, glabrous; leaves oblong, 1-2 cm. long; pedicels filiform,  
    3-7 cm. long; corolla violet or bluish, with yellow protuberances at  
    throat (W., N.W. & N. districts, on damp flats):

*M. gracilis* R. Br. *Prodr. Flor. Nov. Holl.* 439 (1810).

*Vern.*: Slender Monkey-flower. *Distr.*: ACEGHJMN—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Plant prostrate or ascending; leaves <1 cm. long; pedicels <3 cm. long  
 (usually much shorter) 3

3. Stems (and all parts) glabrous, rooting at nodes; leaves ovate to oblong,  
    crowded; pedicels seldom exceeding leaves, usually shorter (wide-  
    spread on brackish mud against watercourses, lakes etc.):

**M. repens** R. Br. *Prodr. Flor. Nov. Holl.* 439 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1089 H-K (1957); Fitch in *Curtis's bot. Mag.* 90: t. 5423, col. (1864); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 21, col. (1967).

*Vern.*: Creeping Monkey-flower (Maori Musk). *Distr.*: CDEGHKMNPTWZ—also W.A., S.A., Tas., N.S.W., Qd, Cent. Aust., N.Z.

—Stems (and pedicels)  $\pm$  pubescent, not rooting; leaves narrowly oblong-elliptic; pedicels at last usually much longer than leaves (N.W. & N. districts, on damp saline ground):

**M. prostratus** Benth. in *DC. Prodr.* 10: 373 (1846).

*Vern.*: Small Monkey-flower. *Distr.*: AGM—also S.A., N.S.W., Qd, Cent. Aust.

4. Plant viscid-hairy; corolla 1.5-2.0 cm. long; fruiting pedicels  $\pm$  2 cm. long, not exceeding the leaves; calyx never becoming inflated (widespread in E. highlands, but occasional and localized in moist shaded gullies of W.):

\***M. moschatus** Dougl. ex Lindl. in *Edwards's bot. Reg.* 13: t 1118, col. (1828).

*Illust.*: Hart in Lindley (*l.c.*); Butcher, *New ill. Brit. Flor.* 2: fig. 1033 (1961); Black, *Flor. S. Aust.* ed. 2: fig. 1094 (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 4527 (1951); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2073, col. (1926); Burbidge, *Flor. Aust. Cap. Terr.* fig. 330 (1970).

*Vern.*: Musk Monkey-flower. *Distr.*: JNRSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Plant glabrous; corolla >2.5 cm. long; fruiting pedicels 2-3 cm. long, exceeding the reduced floral leaves; calyx inflated in fruit (sporadic garden escape of cooler districts):

\***M. luteus** L. *Spec. Plant.* ed. 2, 2: 884 (1763).

*Illust.*: Butcher, *New ill. Brit. Flor.* 2: fig. 1032 (1961); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2074, col. (1926); Clements, *Natn. geogr. Mag.* 51: t. 14 fig. 1, col. (1927).

*Vern.*: Glabrous Monkey-flower. *Distr.*: JZ.

\*ZALUZIANSKYA F. W. Schmidt (1793)

\***Z. divaricata** (Thunb.) Walp. *Repert. Bot. syst.* 3: 308 (1844-45).

*Manulea divaricata* Thunb. *Prodr. Plant. capens.* 101 (1800).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1097 (1957).

*Vern.*: Spreading Night-phlox. *Distr.*: C (Dimboola district)—also S.A.

MAZUS Lour. (1790)

**M. pumilio** R. Br. *Prodr. Flor. Nov. Holl.* 439 (1810).

[non *M. pumilus* (Burm. f.) van Steenis in *Nova Guinea* n. ser. 9: 31 (1958).]

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1089 L-N (1957); Hooker, *Icon. Plant.* 6: t. 567 (1843); Bauer in Endlicher, *Icon. Gen. Plant.* t. 102 (1838); Garnet, *Wildflowers Wilson's Prom.* fig. 722 (1971).

*Vern.*: Swamp Mazus. *Distr.*: DEJKNPRTVWZ—also S.A., Tas., N.S.W., Qd, N.Z.

### VERONICA L. (1753)

1. Leaves 1.5-3.0 cm. long, glabrous, *deeply dissected* into linear segments which are entire or lobed again; flowers pale blue or lilac, in numerous long terminal racemes, the corolla-lobes 3-4 mm. long; capsule obcordate,  $\pm$  6 mm. long (perennial alpine herb 6-18" tall):

*V. nivea* Lindl. in *Edwards's bot. Reg.* 28: Misc. 42 (1842).

*Illust.*: Hooker, *Icon. Plant.* 7: t. 640 (1844).

*Vern.*: Milfoil Speedwell. *Distr.*: RSV—also Tas., N.S.W.

—Leaves *entire or toothed*

2. Leaves mostly <2.5 cm. long or, if ever >2.5 cm., then <1 cm. wide and the flowers very few (2-6) in racemes  
Leaves mostly >3 cm. long, >1 cm. wide; racemes elongated, often many-flowered (perennials)
3. Plant *herbaceous*, with *creeping rootstock*, never glaucous; stems <2 ft. tall; capsule much *compressed*, *obcordate to  $\pm$  orbicular*, the valves not separating from septum  
Plant a *shrub or semi-shrub*, usually 2 ft. high or more; capsule *ovoid*, inflated, the septum splitting and 4 valves separating readily
4. Leaves sessile but *not stem-clasping*, *green*, lanceolate, *closely serrate*; flowers *white or pale mauve in dense erect racemes* (widespread in cooler forest tracts, frequent in highlands):

*V. derwentiana* Andr. *Bot. Repos.* 8: t. 531 (1808)—etymol. emend. ad indicem.

*Illust.*: Andrews (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 414, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 142 (1967); Hösel, *Wildflowers S.-E. Aust.* 44, col. (1969); King & Burns, *Wildflowers Tasm.* 77, col. (1969); Mass, *Flowers aust. Alps* 39 (1967); Garnet, *Wildflowers Wilson's Prom.* t., n. 726 opp. 62 (1971); Curtis's *bot. Mag.* 63: t. 3461, col. (1836)—all as *V. derwentia* except the last (as *V. labiata*).

*Vern.*: Derwent Speedwell. *Distr.*: DEJKNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[Differing from other Victorian representatives of *Veronica* in their tall semi-shrubby habit and capsular dehiscence (septicidal), this species and the next one (*V. perfoliata*) have been formally transferred to the genus *Parahebe* W. R. B. Oliver by B. Briggs & F. Ehrendorfer in *Taxon* 17<sup>o</sup>: 742 (Dec. 1968). The names *Parahebe derwentiana* and *P. perfoliata* were adopted in Burbidge & Gray's *Flor. Aust. Cap. Terr.* 332 (1970), and the former delineated (fig. 335). As in current floras of other Australian States, these two species are here retained under the wider, familiar circumscription of *Veronica*.]

- Leaves *stem-clasping* or even connate at base, *glaucous*, often ovate, *entire* or with a few obscure teeth; flowers *bright mauve or blue* streaked with purple, in rather *loose* and often *nodding* racemes (widespread on drier rocky slopes, often in auriferous terrain):

*V. perfoliata* R. Br. *Prodr. Flor. Nov. Holl.* 434 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 220, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 141 (1967); *Curtis's bot. Mag.* 44: t. 1936, col. (1817); Drake in *Edwards's bot. Reg.* 23: t. 1930, col. (1837).

*Vern.*: Diggers' Speedwell. *Distr.*: MNRSVWZ—also N.S.W., A.C.T.

5. Plant  $\pm$  *pubescent*; leaves *petiolate*; flowers 6-20 in very loose racemes, the pedicels *much longer* than bracts; corolla white or pale lilac, heavily *lined with purple*; capsule *obcordate*, *shorter than calyx* (in shady forests of Otways and E. highlands):

*V. notabilis* F. Muell. ex Benth. *Flor. aust.* 4: 511 (1868).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 415, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 729 (1971).

*Vern.*: Forest Speedwell. *Dist.*: KNSWZ—also Tas., N.S.W., Qd.

- Plant *glabrous*, with hollow  $\pm$  fleshy stems; leaves *sessile*, often stem-clasping; flowers usually  $>20$  in rather compact racemes, the pedicels *longer* than bracts; corolla pale *blue*; capsule slightly longer than broad, obscurely emarginate, *as long as calyx* (green water-plant, localized along Snowy River in E. Gippsland & Burrowye Ck in N.E.):

\**V. anagallis-aquatica* L. *Spec. Plant.* 1: 12 (1753).

*Illust.*: Leigh-Hunt in Butcher, *New ill. Brit. Flor.* 2: fig. 1041 (1961).

*Vern.*: Blue Water Speedwell. *Distr.*: VW—also N.S.W., A.C.T., ?S.A.

- As for the last, but flowering pedicels *no longer* than bracts, corolla light *pink* (all except the smallest petal striped with darker pink) and the distinctly emarginate capsule orbicular to *broader than long* (often reddish-tinged water-plant of far S.W., from Mt. Eccles to near Glenelg River mouth):

\**V. catenata* Pennell in *Rhodora* 23: 37 (1921).

*V. aquatica* Bernh. *Begriff Pflanzenart* (1834), *non* S. F. Gray (1821), *nec V. anagallis-aquatica* L. (1753).

*Illust.*: Leigh-Hunt in Butcher, *New ill. Brit. Flor.* 2: fig. 1042 (1961); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1101 (1957), as *V. anagallis-aquatica*; Abrams, *Ill. Flor. Pacific States* 3: fig. 4791 (1951), as *V. connata*.

*Vern.*: Pink Water Speedwell. *Distr.*: E—also S.A., N.Z.

6. Leaves conspicuously *crenate or serrate*, mostly broad-ovate to sub-orbicular  
Leaves *entire* or nearly so (if ever distantly toothed, then linear to narrow-lanceolate)

7. Leaves *linear to lanceolate, pointed, all opposite*; flowers *blue*, 4-8 mm. long, in loose racemes in upper axils (widespread slender perennial of grassy places):

*V. gracilis* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 373, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 140 (1967); Curtis, *Student's Flor. Tasm.* 3: 523 fig. 116 (1967); Garnet, *Wildflowers Wilson's Prom.* fig. 727 (1971).

*Vern.*: Slender Speedwell. *Distr.*: DEJKMNPSTVWZ—also S.A., Tas., N.S.W., A.C.T.

[In Victoria this name is currently applied to at least two populations, one with broadish leaves and short internodes, the other with narrow-linear leaves in distant pairs along very slender stems and with long-pedicellate flowers. Critical study is desirable in this and other Australian groups of the genus.]

—Leaves *oval to narrowly oblong, blunt*, the floral leaves *alternate*; flowers white or pale bluish,  $\pm$  3 mm. long, forming elongated leafy terminal racemes

8. Corolla *slightly exceeding calyx*; style *slender*, as long as corolla-lobes; capsule broadly *obcordate*, minutely glandular-hairy (*decumbent* perennial herb of E. highlands, with isolated occurrence in far S.W.):

*V. serpyllifolia* L. *Spec. Plant.* 1: 12 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 31 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1051 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4783 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 239 fig. 1, col. (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2090, col. (1926); Coste, *Flor. Franc.* 3: fig. 2738 (1906).

*Vern.*: Thyme Speedwell. *Distr.*: ERSVW—also Tas., N.S.W., A.C.T., Qd, N.Z.

—Corolla *shorter than calyx*; style *extremely short*, almost obsolete; capsule  $\pm$  *orbicular*, glabrous (*erect annual weed*, widely scattered):

\**V. peregrina* L. *Spec. Plant.* 1: 14 (1753).

*Illust.*: Pomeroy in Mason, *Flor. Marshes Calif.* fig. 321 a-d (1957); Abrams, *Ill. Flor. Pacific States* 3: fig. 3784 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 30 a & b (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2095, col. (1926); Coste, *Flor. Franc.* 3: fig. 2737 (1906); Georgia, *Manual Weeds* fig. 269 (1914).

*Vern.*: Wandering Speedwell. *Distr.*: ACEMRT—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

9. Flowers *sessile* in long leafy racemes; sepals *lanceolate, unequal*, longer than corolla; capsule *obcordate*,  $\pm$  3 mm. long and 3-4 mm. broad (widespread hairy annual, from 1" to 18" high):

\**V. arvensis* L. *Spec. Plant.* 1: 13 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 34 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1052 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4785 (1951);

M.E.R. in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 78 c (1940); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 239 fig. 5, col. (1915); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2094, col. (1926).

*Vern.*: Wall Speedwell. *Distr.*: DEJMNRS TVWZ—also S.A., Tas., N.S.W., N.Z.

—Flowers manifestly *pedicellate*

10. Leaves in distant pairs, *subsessile*, *thick*, rigid, 1-3 cm. long, the margins  $\pm$  *recurved*; flowers in loose subterminal racemes; corolla-lobes lilac, 8-12 mm. long, one broader than others (far S.W., in Portland district):

*V. distans* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1102 (1957).

*Vern.*: Coast Speedwell. *Distr.*: E—also W.A., S.A., Tas.

—Leaves distinctly *petiolate*, relatively *thin*, the margins *plane* or nearly so; corolla-lobes < 7 mm. long

11. Flowers *solitary* in leaf-axils; fruiting pedicels > 12 mm. long (*annuals* with  $\pm$  *decumbent branches*)

Flowers forming *loose racemes* in axils of upper leaves; fruiting pedicels up to 10 mm. long but often much less (*widespread perennials*)

12. Stems *villous*, ascending or erect; leaves *green*, rather rigid, *obtusely* toothed, the uppermost with petioles much < half the length of blade; sepals *enlarging* conspicuously in fruit; margins of capsule strongly *ciliate*:

*V. calycina* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810).

*Vern.*: Hairy Speedwell. *Distr.*: CDEHJKNPRTWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Stems *microscopically pubescent* with short *decurved hairs*, procumbent and sometimes rooting at nodes; leaves often *purple-tinged*, flaccid, *acutely* toothed, the uppermost with petioles  $\pm$  *half as long as* blade; sepals *hardly enlarging* in fruit; margins of capsule *non-ciliate*:

*V. plebeia* R. Br. *Prodr. Flor. Nov. Holl.* 435 (1810).

*Illust.*: Payne in Bailey, *Weeds & susp. poison. Plants* Qd fig. 226 (1906).

*Vern.*: Trailing Speedwell. *Distr.*: CHMNPTWZ—also S.A., Tas., N.S.W., Qd.

13. Leaves regularly *crenate-serrate*; sepals *narrowed* at base, about as long as the bright *blue corolla*; capsule 2-lobed, the lobes *widely divergent* and keeled on margins (*widespread weed of cultivation*):

\**V. persica* Poir. *Encycl. méth. Bot.* 8: 542 (1808).

*V. agrestis* sens. Ewart *Flor. Vict.* 1021 (1931), *non* L. (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 36 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1057 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4786 (1951); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2101, col. (1926); Coste, *Flor. Franc.* 3: fig. 2728 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 334 (1970).



*Vern.*: Persian Speedwell (Buxbaum's Speedwell). *Distr.*: CEJMNPW—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Leaves with 2-3 *large teeth* on each side toward base; sepals *broadened and cordate* at base, *longer than* the pale lilac corolla; capsule neither emarginate nor lobed (occasional garden weed in Kyneton and Castlemaine districts):

\**V. hederifolia* L. *Spec. Plant.* 1: 13 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 39 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1056 (1961); Black, *Naturalised Flor. S. Aust.* 120 (1909); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 239 fig. 10, col. (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2099, col. (1926); Coste, *Flor. Franc.* 3: fig. 2726 (1906).

*Vern.*: Ivy-leaf Speedwell. *Distr.*: N—also S.A., Tas.

### \*DIGITALIS L. (1753)

\**D. purpurea* L. *Spec. Plant.* 2: 621 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 22: t. 22 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1035 (1961); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 33 (1951); Davey, *J. Dep. Agric. Vict.* 20: 83 (1922); Abrams, *Ill. Flor. Pacific States* 3: fig. 4779 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 240 fig. 1, col. (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2108, col. (1926).

*Vern.*: Foxglove. *Distr.*: NVW—also Tas., N.Z.

### \*ORTHOCARPUS Nutt. (1818)

Stems *stout, erect*, with *long white setiform hairs*; flowers in a *dense thick terminal spike*; corolla 15-25 mm. long (scattered in W. pastures):

\**O. purpurascens* Benth. *Scroph. ind.* 13 (1835).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4830 (1951); Clements, *Natn. geogr. Mag.* 51: t. 13 fig. 6, col. (1927); Jepson, *Manual flowering Plants Calif.* 944 (1925); Munz, *Manual S. Calif. Bot.* 482 (1935); Cannon, *Publ. Carnegie Instn* 131: t. 7 (1911); *Gartenflora* 33: t. 1166, col. (1884).

*Vern.*: Purple Owl-clover. *Distr.*: DEJR—also N.S.W.

Stems *slender, ± procumbent*, with *short minute ± deflexed hairs*; flowers in long, loose leafy spikes; corolla 6-12 mm. long (occasional in pastures of W. & N.E.):

\**O. pusillus* Benth. *Scroph. ind.* 12 (1835).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4843 (1951).

*Vern.*: Small Owl-clover. *Distr.*: JKNRV.

### EUPHRASIA L. (1753)

1. Plant *annual*, 2-12" high, not or sparingly branched, manifestly *glandular-hairy all over*; stem-leaves linear, the terminal lobe *acutish and longer*

than others; flowers yellow in lowlands, more often mauve or purplish in alps and subalps:

*E. scabra* R. Br. *Prodr. Flor. Nov. Holl.* 437 (1810).

*Illust.*: Wettstein, *Monogr. Gatt. Euphrasia* tt. 6 & 13 (1896).

*Vern.*: Yellow Eyebright. *Distr.*: EHJMNPSVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[The diminutive var. *alsa* (F. Muell., *ut sp.*) J. H. Willis in *Muelleria* 1: 148 (1967), with congested whitish flowers conspicuously veined, occurs on the Bogong High Plains; it was erroneously equated with the non-glandular, trident-leaved South American *E. antarctica* Benth. (1846) in Bentham's *Flor. aust.* 4: 522 (1868), followed by Ewart in his *Flor. Vict.* 1024 (1931). The var. *caudata* Willis *l.c.* 149 (1967) is widespread in the Victorian alps, and is distinguishable both by its more glandular indumentum and a long-caudiform apical lobe to the upper leaves and floral bracts.]

—Plant perennial, if ever glandular-hairy then terminal lobe of stem-leaves not or hardly exceeding the lateral lobes; flowers white to purple, never yellow 2

2. Leaves cuneate and subdigitate, the 3-7 ascending lobes confined to apical portion; inflorescence glandular-hairy, but lower leaves often glabrous; flowers large and spectacular, in a cluster terminating the leafy stem of  $\pm$  6" high (alpine):

*E. gibbsia* du Rietz in *Svensk. bot. Tidskr.* 42, Heft 4: 104 (1948).

*Vern.*: Eyebright. *Distr.*: S—also Tas.

[Two populations occur in Victoria, viz.: forma *subglabrifolia* du Rietz (*l.c.*), endemic on the Baw Baws, and the larger purplish-flowered forma *comberi* du Rietz (*l.c.*) which extends from Tasmania to Mt. Speculation (5600 ft.), Vic.]

—Leaves linear to oblong or broadly oblanceolate, the lobes not distinctly subdigitate; inflorescence usually non-glandular 3

3. Stems often stoutish, leafy, not branched above base, with  $\pm$  contracted racemes of large-lipped flowers (each 1-2 cm. long); leaves oblanceolate to broadly oblong, dentate, with glabrescent surfaces; floral bracts broad, concealing and usually exceeding the calyx; margins of upper leaves, bracts, calyx-lobes and anthers often copiously beset with white-woolly hairs (alpine):

*E. glacialis* Wettst. *Monogr. Gatt. Euphrasia* 259, t. 13 (1896).

*Illust.*: Wettstein (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 497, col. (1968); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 11, col. (1962), as *E. collina*; Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 57, col. (1964); Mass, *Flowers aust. Alps* 27 (1967).

*Vern.*: Glacial Eyebright. *Distr.*: RSVW—also N.S.W., ?A.C.T.

[Except for a typical population on the Cobberas Mtns., all Victorian occurrences are referable to the var. *eglandulosa* J. H. Willis in *Muelleria* 1: 146 (1967), with non-glandular indumentum. Plants on Mt. Buffalo have more elongated inflorescences and may represent a different, possibly undescribed taxon.]

—Stems *slender*, often  $\pm$  wiry and *branched above*, naked between the long internodes (1-3"), with elongating racemes (to 4") of smaller-lipped flowers that seldom much exceed 1 cm.; leaves  $\pm$  linear, few-toothed, glabrous to variously scabrid; floral bracts relatively *narrow*, *not* concealing the often longer and usually almost glabrous calyx (lowland to montane plants):

**E. collina** R. Br. *Prodr. Flor. Nov. Holl.* 436 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 3, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1089 A-D (1957); Wettstein, *Monogr. Gatt. Euphrasia* t. 5 (1896); Garnet, *Wildflowers Wilson's Prom. t.*, n. 720 opp. 95 (1971).

*Vern.*: Purple Eyebright. *Distr.*: CDEJNPRSTVWZ—also W.A., S.A., Tas., N.S.W., Qd.

[*E. speciosa* R. Br. appears to be only a robust form, not differing from *E. collina* in any significant feature except flower-size.]

\***PARENTUCELLIA** Viv. (1824)

Leaves *ovate*, <2 cm. long; stems *slender*; calyx 7-10 mm. long, the lobes much *shorter than* tube; corolla *purplish-red*, 9-13 mm. long, the limb 3-4 mm. broad (widespread weed):

\***P. latifolia** (L.) Caruel in Parl. *Flor. Ital.* 6: 480 (1885).

*Euphrasia latifolia* L. *Spec. Plant.* 2: 604 (1753);

*Bartsia latifolia* (L.) Sibth. & Sm. *Flor. Græc.* 6: 69, t. 586 (1827).

*Illust.*: Bauer in Sibthorpe (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1105 (1957); Davey, *J. Dep. Agric. Vict.* 21: 439 (1923), as *Bartsia latifolia*; Rees in Ewart, *ibid.* 9: t. opp. 32, col. (1911), as *B. latifolia*; Coste, *Flor. Franc.* 3: fig. 2768 (1906), as *B. latifolia*; Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2118, col. (1926), as *Eufragia latifolia*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 332 (1970).

*Vern.*: Common Bartsia. *Distr.*: BCDEHJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

Leaves *lanceolate*, >2 cm. long; stems *stout*; calyx  $\pm$  15 mm. long, the lobes almost *as long as* tube; corolla *yellow*,  $\pm$  20 mm. long or more, the limb 8-12 mm. broad (clammy weed of moister W. & S. districts):

\***P. viscosa** (L.) Caruel in Parl. *Flor. Ital.* 6: 482 (1885).

*Bartsia viscosa* L. *Spec. Plant.* 2: 602 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants.* 23: t. 11 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1078 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4799 (1951); Heukels, *Flor. Nederl.* 3: 188 (1909); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2117, col. (1926), as *Eufragia viscosa*.

*Vern.*: Sticky Bartsia. *Distr.*: CDEJKNPRTWZ—also W.A., S.A., Tas., N.S.W., N.Z.

## \*BELLARDIA All. (1785)

\**B. trixago* (L.) All. *Flor. Ped.* 1: 61 (1785).*Bartsia trixago* L. *Spec. Plant.* 2: 602 (1753).

*Illust.*: Segura in Descole & Borsini, *Descole. Gen. Spec. Plant. Argent.* 5: t. 133 (1956); Abrams, *Ill. Flor. Pacific States* 3: fig. 4800 (1951); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2116, col. (1926), as *Trixago apula*; Coste, *Flor. Franc.* 3: fig. 2770 (1906), as *Bartsia Trixago*.

*Vern.*: *Bellardia*. *Distr.*: BCGHJMRZ—also W.A., S.A., N.S.W.

[South African *Sutera floribunda* (Benth.) O. Kuntze appeared at Coode Id near the Yarra R. mouth in Dec. 1908, but has not been noted again since then. It is a viscid-hairy semi-shrub to 2 ft. high, with toothed oval leaves and small yellowish flowers in leafy terminal panicles.]

## Family GESNERIACEÆ

## FIELDIA A. Cunn. (1825)

*F. australis* A. Cunn. in *Field Geogr. Mem. N.S.W.* 364, cum. icon. (1825).

*Illust.*: Cunningham (l.c.); Fitch in *Curtis's bot. Mag.* 84: t. 5089, col. (1858); Swan in Hooker, *Exot. Flor.* 3: t. 232 (1827); Garnet, *Wildflowers Wilson's Prom. t.*, n. 732 opp. 46 (1971); Everard, *Wild Flowers World* t. 139 fig. F, col. (1970).

*Vern.*: *Fieldia*. *Distr.*: TZ—also N.S.W., Qd.

## Family ACANTHACEÆ

Plant robust, >1 ft. high; leaves lobed, >6" long; flowers crowded in spikes, with spiny bracts; corolla white, >1" long (sporadic garden escape)

\**Acanthus* (p. 575)

Plant sprawling, <1 ft. high; leaves entire, <2" long; flowers solitary in axils, with minute spineless bracts; corolla blue, much <1" long (far E. Gippsland, against Mallacoota road S. of Genoa)

*Brunoniella* (p. 575)

## BRUNONIELLA Bremekamp (1964)

*B. pumilio* (R.Br.) Bremekamp in *Proc. K. ned. Akad. Wet. sect. C*, 67: 305 (1964).

*Ruellia pumilio* R.Br. *Prodr. Flor Nov. Holl.* 479 (1810);

*Dipteracanthus pumilio* Nees in *DC.Prodr.* 11: 124 (1847).

*Vern.*: Dwarf *Brunoniella*. *Distr.*: Z (near Genoa)—also N.S.W., Qd.

[Mediterranean *Acanthus mollis* L. (Bear's Breach), classical *Acanthus* of the Greeks, is much cultivated and spreads occasionally along suburban railway embankments or escapes from old gardens (e.g. in the Dandenong Ranges). This herbaceous perennial has large, lobed, shiny, rhubarb-like leaves and dense robust flower-spikes 3-5 ft. tall, the numerous large green spiny-toothed bracts subtending very unequally lobed calyces and arched, 1-lipped white corollas (3.5 cm. long).]

## Family OROBANCHACEÆ

## OROBANCHE L. (1753)

\**O. minor* Sm. *Engl. Bot.* 6: t. 422 (1797).

*O. cernua* Lœfl. var. *australiana* sens. Ewart *Flor. Vict.* 1027 (1931),  
non *O. australiana* F. Muell. ex R. Tate (1883).

*Illust.*: Aiken, *Tuatara* 6: t. 1 opp. 90 fig. E (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 139 (1958); Williamson, *Vict. Nat.* 4: 149 (1931), as *O. cernua* var. *australiana*; Ross-Craig, *Drawings Brit. Plants* 23: t. 28 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1086 (1961); Adams, *Ill. Flor. Pacific States* 4: fig. 4959 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 90 a-e (1915); Reichenbach, *Icon. Flor. germ.* 20: t. 1804, col. (1862); Burbidge, *Flor. Aust. Cap. Terr.* fig. 336 (1970).

*Vern.*: Lesser Broomrape. *Distr.*: BGN—also Tas., N.S.W., A.C.T., N.Z.

[The indigenous S. & W. Australian *O. australiana* F. Muell. ex R. Tate in *Trans. roy. Soc. S. Aust.* 6: 174 (1883) appears to differ in its larger, broader (5-10 mm.), glabrescent floral bracts and  $\pm$  deflexed upper lip of corolla. It has been collected near the mouth of the Murray R., and may possibly occur also in the Murray Mallee of Victoria—a fragmentary collection (in Melbourne Herbarium) made at Swan Hill about 1867-68 might be referable to *O. australiana*.]

## Family LENTIBULARIACEÆ

Sepals 2; corolla yellow or purplish

*Utricularia* (p. 576)

Sepals 4, decussate; corolla pink, 5-8 mm. long

*Polypompholyx* (p. 577)

## UTRICULARIA L. (1753)

1. Leaves dissected into numerous capillary segments, always submerged; corolla yellow, the upper lip short and ovate, the lower 10-12 mm. wide with brownish veins along the raised centre; spur obtuse, curved, shorter than lower lip (free-floating aquatic of ponds and water-courses, widely scattered except in farther N.W.):

*U. australis* R.Br. *Prodr. Flor. Nov. Holl.* 430 (1810).

*U. flexuosa* sens. Ewart *Flor. Vict.* 1028 (1931), non Vahl (1805).

*Illust.*: Williamson, *Vict. Nat.* 44: 330 fig. 9 (1928); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 229 (1906); Pellegrin in Lecomte, *Flor. gén. Indo-Chine* 4: 472, 475 (1930); Blatter, *Beautiful Flowers Kashmir* 2: t. 46 fig. 6, col. (1929)—all as *U. flexuosa*.

*Vern.*: Yellow Bladderwort. *Distr.*: CDEGJKMNPRSVWXXZ—also W.A., S.A., Tas., N.S.W., Qd, N. Terr., N.Z., N.G., Afr., North (temp.) Eur. & Asia.

—Leaves entire and  $\pm$  spatulate or absent, often emergent; corolla lilac to purple (plants never floating, usually on wet mud) 2

2. Bracts on scape alternate, not spurred; flowers almost sessile; lower lip of corolla  $\pm$  7 mm. wide, about as long as the conical spur (widespread on swampy heathland);

*U. lateriflora* R. Br. *Prodr. Flor. Nov. Holl.* 431 (1810).

*Illust.*: Rodway, *Tasm. Flor.* t. [26] inter 144 & 145 (1903); Lloyd, *Carnivorous Plants* t. 20 fig. 5 (1942); Lloyd, *Flora* 126: 313 (1932)—veg.

*Vern.*: Tiny Bladderwort. *Distr.*: DEJKNPTWZ—also S.A., Tas., N.S.W., Qd, N.Z.

—Bracts on scape *opposite, spurred* (the spurs often very short); flowers distinctly *pedicellate*; lower lip of corolla either much longer or much shorter than spur, yellow in throat 3

3. Spur *bluish, ± deflexed*, much shorter than lower lip of corolla which is 10-20 mm. broad (widespread herb with scapes to 12" tall):

*U. dichotoma* Labill. *Nov. Holl. Plant. Specim. 1*: 11, t. 8 (1804).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 264, col. (1968); Erickson, *Plants of Prey* t. 16 (opp. 80) fig. 6, col. (1968); Rosser, *Wildflowers Vict.* 39, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 194 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1110 (1957); Curtis, *Student's Flor. Tasm.* 3: 535 (1967); Rodway, *Some Wildflowers Tasm.* t. on 115 (1910); Rodway, *Tasm. Flor.* t. [25] inter 144 & 145 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 337 (1970); Garnet, *Wildflowers Wilson's Prom. t.*, n. 734 opp. 94 (1971).

*Vern.*: Fairies' Aprons (Purple Bladderwort). *Distr.*: CDEJMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Spur pale *yellowish*, horizontal, almost twice as long as lower lip which is violet and 4-8 mm. broad (ephemeral of far W., the filiform scape 1-2" long):

*U. violacea* R. Br. *Prodr. Flor. Nov. Holl.* 431 (1810).

*Illust.*: Erickson, *Plants of Prey* t. 16 (opp. 80) fig. 10, col. (1968).

*Vern.*: Violet Bladderwort. *Distr.*: D—also W.A., S.A.

#### POLYPOMPHOLYX Lehm. (1844)

*P. tenella* (R. Br.) Lehm. *Nov. Stirp. Pugill.* 8: 50 (1844).

*Utricularia tenella* R. Br. *Prodr. Flor. Nov. Holl.* 432 (1810).

*Illust.*: Erickson, *Plants of Prey* t. 16 (opp. 80) fig. 12, col. (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 105 (1886); Mueller, *Plants indig. Colon. Vict.* t. 64 (1864-65), as *P. exigua*; Lloyd, *Carnivorous Plants* t. 20 fig. 10 (1942)—veg.

*Vern.*: Pink Bladderwort. *Distr.*: CDEJKNPRT—also W.A., S.A., Tas.

#### Family \*MARTYNIACEÆ

Flowers in a *loose open* inflorescence; calyx spathe-like, of *united sepals*; corolla *creamy to lilac*,  $\pm$  blotched with purple; pod *glandular-viscid*, not ribbed (widespread across N. of State) \**Proboscidea* (p. 578)

Flowers *congested* in a dense raceme; calyx of *free sepals*; corolla *bright yellow*; pod longitudinally *ridged and covered with prickles*, not glandular (localized along Upper Murray valley near Walwa) \**Ibicella* (p. 578)

## \*PROBOSCIDEA Keller (1762)

\**P. louisianica* (Mill.) Thell. in *Mém. Soc. nat. Sci. Cherbourg* (sér. 14, 38: 480 (1911-12).

*Martynia louisianica* Mill. *Gdnrs Dict.* ed. 8: n. 3 (1768)—ut "louisiana" (orthogr. emend. pagina ult.).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1108 (1957), as *P. jussieui*; King in Whittet, *Weeds* (N.S.W. Dep. Agric.): Frontis., col. (1958); Edwards in *Curtis's bot. Mag.* 26: t. 1056, col. (1807), as *Martynia proboscidea*; Lee, *Wild Life* (Melb.) 8: 145 (1947)—fruit, as *M. proboscidea*; Gardner, *J. Dep. Agric. W. Aust.* ser. 2, 9: 130 (1932), as *M. louisiana*; Blakely, *Agric. Gaz. N.S.W.* 34: 576 (1923), as *P. louisiana*; Everard, *Wild Flowers World* t. 162 fig. c, col. (1970).

*Vern.*: Purple-flower Devil's-claw. *Distr.*: CGHMRV—also W.A., S.A., N.S.W., A.C.T., Qd.

## \*IBICELLA v. Eseltine (1929)

\**I. lutea* (Lindl.) v. Eseltine in *Tech. Bull. N.Y. St. agric. Exp. Sta.* 149: 31 (1929).

*Martynia lutea* Lindl. in *Edwards's bot. Reg.* 11: t. 934, col. (1825).

*Illust.*: Hart in Lindley (*l.c.*); Blakely, *Agric. Gaz. N.S.W.* 34: 577 (1923), as *Proboscidea lutea*; Lawrence, *Baileya* 5: 126 fig. b (1957); Abrams, *Ill. Flor. Pacific States* 4: fig. 4946 (1960).

*Vern.*: Yellow-flower Devil's-claw. *Distr.*: U (near Walwa)—also N.S.W., Qd.

## Family BIGNONIACEÆ

## PANDOREA Endl. ex Spach (1840)

*P. pandorana* (Andr.) Steenis in *Bull. Jard. bot. Buitenz.* 10: 198 (1928).

*Bignonia pandorana* Andr. *Bot. Repos.* 2: t. 86 (1800);

*Tecoma australis* R. Br. *Prodr. Flor. Nov. Holl.* 471 (1810).

*Illust.*: Andrews (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 439, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 143 (1967); Reeves in *Vict. Year Book* 76: t. inter 18 & 19 (1962); Reeves in Ashton, *Victoria's Resources* 6\*: 48 (1964); *Curtis's bot. Mag.* 22: t. 865, col. (1805), as *Bignonia pandoræ*; Maiden, *Flowering Plants & Ferns N.S.W.* 3: t. 11, col. (Oct. 1895), as *Tecoma australis*; Sulman, *Wild Flowers N.S.W.* 2: t. 50 (1914), as *T. australis*; Garnet, *Wildflowers Wilson's Prom. t.*, n. 731 opp. 127 (1971); Everard, *Wild Flowers World* t. 139 fig. c, col. (1970).

*Vern.*: Wonga-vine. *Distr.*: HJMNPRSTVWZ—also Tas. (Flinders Id), N.S.W., Qd.

[About 1960, the subtropical larger- and pink-flowered *P. jasminoides* (Lindl.) K. Schumann in Engler *Nat. Pflfam.* IV, 36: 230 (1895) was found growing spontaneously along Gladstone Ck. about 17 miles N.N.E. of Maffra, but whether the occurrence was natural or the result of an escape from earlier cultivation has not been decided. This handsome climber was depicted in colour under the name *Tecoma jasminoides* Lindl. in *Edwards's bot. Reg.* 23: t. 2002 (1837).]

## Family VERBENACEÆ

1. Flowers in spikes, panicles or cymes, ovary 1- or 4-locular 3  
 Flowers in dense pedunculate axillary heads; ovary 2-locular 2
2. Plant herbaceous, prostrate, rooting at nodes, non-scabrous; outer floral bracts very broad, overlapping and involucrel; fruit of 2 minute connivent nutlets (occasional escape in W. & N.W.) \*Phyla (p. 579)  
 Plant shrubby, scrambling rankly, to several feet high, the stems and foliage scabrid; flowers variously coloured; floral bracts narrow and loose; fruit a shiny blackish drupe 3-6 mm. diam. \*Lantana (p. 581)
3. Herbaceous perennials; corolla 5-lobed, pink or blue to violet; ovary 4-locular; fruit of 4 small nutlets <4 mm. long Verbena (p. 580)  
 Stout maritime shrub or small tree with erect pneumatophores projecting above mud from the waterlogged horizontal roots; leaves broad, leathery, 2-3" long, shining on upper surface; corolla rigid, 4-lobed, yellowish; ovary 1-locular; fruit a pubescent leathery capsule 30-40 mm. long (between Barwon Heads & Corner Inlet) Avicennia (p. 579)

## \*PHYLA Lour. (1790)

\**P. nodiflora* (Michx.) Greene in *Pittonia* 4: 48 (1889).

*Lippia nodiflora* Michx. *Flor. Bor.-Amer.* 2: 15 (1803).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 3: fig. 4350 (1951); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 298 (1957), as *Lippia nodiflora*; Robbins, Bellue & Ball, *Weeds Calif.* fig. 231 (1941), as *L. nodiflora*; Dop in Lecomte, *Flor. gén. Indo-Chine* 4: 773, 781 (1935), as *L. nodiflora*; Poinot in Bonnier, *Flor. Compl. Franc., Suisse & Belg.* 9: fig. 2284, col. (1927), as *L. repens*; Coste, *Flor. Franc.* 3: fig. 2991 (1906), as *L. nodiflora*.

*Vern.*: Fog-fruit. *Distr.*: AMN—also W.A., S.A., N.S.W., Qd, N. Terr.

[The Victorian population, long established at Williamstown, is referable to the var. *canescens* (Humb. et al.) Moldenke in *Phytologia* 1: 98 (1934), with finely pubescent branches and foliage.]

## AVICENNIA L. (1753)

*A. marina* (Forsk.) Vierh. in *Denkschr. Acad. Wiss. Wien* 61: 435 (1907).

*Sceura marina* Forsk. *Flor. Aegypt.-Arab.* 37 (1775);

*A. officinalis* sens. Ewart *Flor. Vict.* 974 (1931) atque auctt. plur., non L. (1753).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 190 & 191, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: tt. 22 & 23, col. (1967), as *A. resinifera*; Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1037 (1957); Ewart, *Handb. For. Trees* t. 209 (1925), as *A. officinalis*; Poole & Adams, *Trees & Shrubs N.Z.* 233 (1963), as *A. resinifera*; Lee, *Wild Life (Melb.)* 9: 102 (1947), as *A. marina*.

*Vern.*: White Mangrove. *Distr.*: NPT—also W.A., S.A., N.S.W., Qd, N.G., N.Z.



[Australian populations are all referable to the var. *resinifera* (Forst., ut sp.) Backh. in *Bull. Jard. bot. Buitenz. ser. 3*, 3: 210 (1921), differing from the typical East African form in its abbreviated (not filiform) style. Some authorities, e.g. H. Eichler in *Suppl. J. M. Black's Flor. S. Aust. (ed. 2)*: 267 (1965), prefer to assign this mangrove genus to a distinct family, *Avicenniaceæ*.]

### VERBENA L. (1753)

1. Leaves oblong to linear-lanceolate, *serrate*, 2-4" long, *sessile* and almost stem-clasping; spikes *very dense*, <4 cm. long; corolla *purple or bluish* 3  
Leaves ovate to obovate in outline, *deeply dissected*, on short but *distinct petioles*; corolla *pale pink to lilac* 2
2. Leaf-blade 2-10 cm. long; spikes *very slender* (to 9" long), the flowers becoming *distant*; calyx 5-toothed; corolla *glabrous* ( $\pm$  *erect*, very widespread plant):

*V. officinalis* L. *Spec. Plant.* 1: 20 (1753).

*Illust.*: Everist, *Common Weeds Farm & Pasture* fig. 88 (1957); Payne in Bailey, *Weeds & susp. poison Plants Qd* fig. 243 (1906); Ross-Craig, *Drawings Brit. Plants* 23: t. 38 (1966); Butcher, *New ill. Brit. Flor.* 2: fig. 1097 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>3</sup>: t. 222 fig. 5, *col.* (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2283, *col.* (1927); Coste, *Flor. Franc.* 3: fig. 2990 (1906).

*Vern.*: Common Verbena. *Distr.*: AEJMNPRSTVW—also S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust., N.Z.

—Leaf-blade 1-2.5 cm. long; spikes long but remaining rather *dense*; calyx 4-toothed; corolla *pubescent* on tube (*procumbent* herb of Mallee & Wimmera where widespread):

\**V. supina* L. *Spec. Plant.* 1: 21 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1028 (1957); Black, *Naturalised Flor. S. Aust.* 127 (1909); Reichenbach, *Icon. Flor. germ.* 18: t. 1292 fig. I, *col.* (1857).

*Vern.*: Trailing Verbena. *Distr.*: ABCFGHM—also S.A., N.S.W.

3. Plant *erect*, 2-6 ft. tall; leaf <2 cm. wide; bracts  $\pm$  4 mm. long; corolla *scarcely twice as long* as calyx (widespread weed in moister districts):

\**V. bonariensis* L. *Spec. Plant.* 1: 20 (1753).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1029 (1957); Burton in Maiden, *Agric. Gaz. N.S.W.* 17: t. opp. 800 (1906); Burton in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 151 (1958); Davey, *J. Dep. Agric. Vict.* 20: 605 (1922); Abrams, *Ill. Flor. Pacific States* 3: fig. 4340 (1951); Burbidge, *Flor. Aust. Cap. Terr.* fig. 312 (1970).

*Vern.*: Purple-top Verbena (Cluster-flower Verbena). *Distr.*: DKNPRTUVWZ—also S.A., N.S.W., A.C.T., Qd, N.Z.

—Plant often *decumbent*, <2 ft. high; leaf mostly 2 cm. wide or more; bracts long-acuminate, 5-6 mm. long; corolla  $\pm$  3 times as long as

calyx (scattered from Koondrook to King R. in north, and from Bellarine Penins. to Lake Wellington in south):

\**V. rigida* Spreng. *Syst. Veg.* 4<sup>2</sup>: 230 (1827).

*V. venosa* Gill. & Hook. in Hook. *Bot. Misc.* 1: 167 (1830).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1030 (1957); Chambers in Maiden, *Agric. Gaz. N.S.W.* 16: t. opp. 706 (1905), as *V. venosa*; Chambers in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 152 (1958); *Curtis's bot. Mag.* 59: t. 3127, col. (1832), as *V. venosa*; Everist, *Common Weeds Farm & Pasture* fig. 58 (1957); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>2</sup>: fig. 3173 (1927), as *V. venosa*. *Vern.*: Veined Verbena. *Distr.*: LPRSX—also S.A., N.S.W.

[*Chloanthes parviflora* Walp. *Repert. Bot. syst.* 4: 58 (1844-48) is included in Ewart's *Flor. Vict.* 975 (1931) with the comment "very rare, if native". The only voucher specimen in Melbourne Herbarium came last century and is labelled "near Swan Hill"; if the species ever did occur in Victoria, it is presumed to have vanished long since, but it still occurs in a few parts of N.S.W. & Q'land. *C. parviflora* is a shrubby perennial with very wrinkled linear leaves ( $\pm 1''$  long) that are white-tomentose beneath, and yellow-green to purplish, curved, bilabiate flowers (to  $\frac{1}{2}''$  long) forming leafy racemes.

Tropical American *Lantana camara* L. (Common Lantana) sometimes appears in suburban gardens, as a result of bird-dropped seed, but never becomes the rampant weed that it does under the milder, more humid conditions of eastern coastal gullies in N.S.W. and Q'land.]

### Family LABIATÆ [Lamiaceæ]

[In Engler & Prantl's classification, the closely related families *Verbenaceæ* and *Labiata* were assigned to the order *Tubifloræ*, occupying a position between *Boraginaceæ* and *Solanaceæ*. But J. Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): 121, 503 (1959), has linked the *Labiata* with *Myoporaceæ* in a separate order, *Lamiales*. This re-appraisal of affinities has been adopted in the present handbook.]

1. Calyx deeply cleft into 2 *obvious lips* which are sometimes toothed 15  
Calyx with 5-10 teeth, *not* distinctly 2-lipped 2
2. Leaves in *regular whorls* of 3-6; calyx equally 5-toothed; corolla 2-lipped, white or mauve; perfect stamens 2, with 1-locular anthers (shrubs) *Westringia* (p. 585)  
Leaves always in *pairs*, opposite 3
3. Flowers mauve to purple, in a single *dense terminal 4-angled spike* surmounted by a few large sterile violet bracts; calyx 5-toothed; corolla-lobes nearly equal; stamens 4, enclosed (fragrantly aromatic shrubs) \**Lavandula* (p. 591)  
Flowers axillary (sometimes whorled and crowded in upper axils) or in small panicle-forming heads, 4
4. Corolla manifestly 1- or 2-lipped 6  
Corolla funnel-shaped, small, with 4 almost *equal lobes*, white to lilac (perennial herbs) 5
5. Perfect stamens 4, corolla *often exceeding calyx*; leaves entire to *closely serrate*, *strongly aromatic* *Mentha* (p. 595)

- Perfect stamens 2; corolla white, *hardly longer than calyx*; leaves coarsely and *distantly serrate*, with *faint fruity scent*, 2-5" long (swamp plant to 4 ft. tall) *Lycopus* (p. 595)
6. Corolla 2-lipped 8  
Corolla 1-lipped, much longer than calyx; stamens exserted 7
7. Lip of corolla *white*, *unequally 5-lobed*, the tube *glabrous* internally *Teucrium* (p. 583)  
Lip of corolla mostly *blue to purple*, *3 lobed* (midlobe longer than laterals and  $\pm$  emarginate), the tube with a *ring of hairs* inside *Ajuga* (p. 584)
8. Tall shrub 5-10 ft. high, with narrow-lanceolate leaves 3-4" long; flowers *fiery-orange*, hairy, 4-5 cm. long, in dense false whorls; calyx 10-ribbed and 10-toothed, 10-12 mm. long in fruit (garden ornamental) *\*Leonotis* (p. 597)
- Herbs <3 ft. high; flowers *never orange*, <3 cm. long 9
9. Calyx 4 mm. long, with *10 subulate hooked teeth*; stamens *enclosed* in corolla-tube; stems and orbicular wrinkled leaves *white-tomentose*; flowers *white*, in *distant*, compact, globular false whorls (very wide-spread, bitter-tasting perennial) *\*Marrubium* (p. 591)  
Calyx with *5 straight teeth*; stamens *exserted* from tube; flowers sometimes purplish 10
10. Flowers in small *dense heads* forming loose *terminal cymose panicles*; at least one pair of stamens *longer* than the upper lip of corolla and diverging; calyx 13-nerved, densely fringed with hairs (garden herb) *\*Origanum* (p. 597)  
Flowers in *axillary whorls*; stamens *no longer* than upper lip of corolla 11
11. Calyx much *expanded and bonnet-like*, *reticulate*, 2 cm. diam. or more, *longer* than white-corolla (glabrous annual of Mallee and Wimmera) *\*Moluccella* (p. 593)  
Calyx *never bonnet-like*, much <2 cm. diam., *no longer* than corolla 12
12. Calyx-teeth *ovate*,  $<\frac{1}{4}$  the length of the cylindrical 10-ribbed tube (8-10 mm. long); flowers numerous in loose whorls, with subulate bracteoles (rhizomic, unpleasant-smelling, hairy perennial of Williams-town district) *\*Ballota* (p. 593)  
Calyx-teeth *lanceolate to subulate*,  $>\frac{1}{4}$  the length of tube 13
13. Lower lip of rosy-purple corolla with *inconspicuous or obsolete* lateral lobes, the tube normally long-exserted from calyx; nutlets *trigonal*, *truncate* at summit; upper leaves often orbicular, sessile and not reduced in size *\*Lamium* (p. 592)  
Lower lip of corolla with *well-developed* lateral lobes; nutlets *obovoid*, *rounded* at summit; upper leaves usually much reduced in size 14
14. Calyx 5- to 10-ribbed; corolla *pale purplish*, usually 6-8 mm. long; lower pair of stamens *longer* than upper; whorls mostly 2- to 6-flowered (usually a weak slender annual without odour) *\*Stachys* (p. 593)  
Calyx 15-ribbed; corolla usually *white*,  $\pm$  12 mm. long; lower pair of stamens *shorter* than upper; whorls >10-flowered (strongly scented perennial 1-3 ft. high) *\*Nepeta* (p. 591)

15. Lips of calyx variously *toothed*; stamens sometimes 2 17  
 Lips of calyx quite *entire*; stamens 4 16
16. Calyx *without any protuberance*; anthers all 2-locular; nutlets *reticulate-rugulose*, attached *laterally or obliquely* at base of the  $\pm$  terminal style (shrubs to small trees) *Prostanthera* (p. 586)  
 Upper lip of calyx with a *prominent hollow dorsal protuberance*; lower pair of anthers 1-locular; nutlets *granular or hairy*, attached by their *bases* to the style which is inserted between them (low herbs of shaded places, <1 ft. high) *Scutellaria* (p. 590)
17. Stamens 4; anthers often 2-locular 19  
 Stamens 2, without staminodes; anthers 1-locular by abortion 18
18. Herbs; leaves *not thickened*, often broad; anther-connective long, *prominently hinged to a short filament*; upper lip of corolla entire or notched *Salvia* (p. 593)  
 Spreading shrub 2-4 ft., with pleasantly fragrant foliage; leaves *thickened and  $\pm$  leathery*, rigid, linear, 1-2" long, with recurved margins; anther-connective *continuous with filament*; upper lip of corolla bluish, notched or shortly bilobed (garden escape) *\*Rosmarinus* (p. 597)
19. Upper lip of calyx broad and *entire*, the lower lip with 4 lanceolate teeth; lower lip of purplish corolla *long, concave, enclosing the stamens*; anthers 1-locular by confluence; whorls of flowers forming *long leafless racemes* (aromatic herb of East Gippsland, with isolated occurrence on Leigh R. above Shelford) *Plectranthus* (p. 597)  
 Upper lip of calyx shortly *3-toothed*, the lower lip with 2 lanceolate lobes; lower lip of corolla neither concave *nor* enclosing stamens; anthers 2-locular (at least in upper 2 stamens); inflorescence leafy *or* a dense spike (rhizomic herbs) 20
20. Flowers in *short dense terminal spikes*, subtended by *large, orbicular, overlapping*, often purplish bracts; corolla violet or creamy-white, its tube *scarcely longer* than calyx, the upper lip hooded; stamens *straight* (very widespread odourless herb of damp ground) *Prunella* (p. 591)  
 Flowers in *axillary whorls*, without differentiated floral bracts; corolla-tube *much longer* than calyx; stamens *curved* (occasional garden escapes) 21
21. Leaves *closely and distinctly crenate*, pale green, *lemon-scented*; bracteoles small, *ovate to obovate*; upper lip of calyx with 3 short *broadly triangular teeth*; corolla *white or pinkish*, the tube *arched* *\*Melissa* (p. 594)  
 Leaves *distantly and obscurely crenate*, odourless; bracteoles numerous, *setaceous, long-ciliate*; all 5 teeth of calyx *long-acuminate* and ciliate; corolla *rosy-purple*, the tube *straight* or nearly so *\*Clinopodium* (p. 595)

## TEUCRIUM L. (1753)

1. Flowers *sessile and solitary* in upper axils, forming short leafy spikes; corolla <twice as long as calyx; leaves to 1" long, narrow-cuneate,

*deeply 3-lobed* or the lobes again toothed (small pubescent perennial herb of Mallee & Wimmera, rarely 8" high):

**T. sessiliflorum** Benth. in *DC. Prodr.* 12: 580 (1848).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1042 (1957).

*Vern.*: Camel Bush. *Distr.*: ABCG—also W.A., S.A., N.S.W.

—Flowers borne on slender axillary *peduncles longer than calyx*; corolla 8-12 mm. long, at least twice the length of calyx 2

2. Leaves (also stems) *quite hoary, entire, even-surfaced*, sometimes undulate on margins, mostly 10-20 mm. long; peduncles *one-flowered*, solitary in axils (open terrain of W., N.W., N. & central districts):

**T. racemosum** R. Br. *Prodr. Flor. Nov. Holl.* 504 (1810).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 107, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1038 D (1957); Tovey & Morris, *Proc. roy. Soc. Vict.* new ser. 35: t. 6 opp. 88 (1922), as var. *polymorphum*.

*Vern.*: Grey Germander. *Distr.*: ABCFGHJMNR—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[The var. *tripartitum* F. Muell. ex Benth. *Flor. aust.* 5: 133 (1870) is remarkable in having much smaller flowers and leaves (4-10 mm. long), the latter *cleft to their bases into 3 linear leaflets*; the indumentum of short white reflexed hairs is also coarser than in typical *T. racemosum*. This distinct variant ranges through the Victorian Mallee from Dimboola district to the far N.W., extending into S.A. & N.S.W. Tovey & Morris (*illust.*: l.c.) described a new variety *polymorphum*, distinguishing it by the *non-exserted* stamens and variably toothed foliage; their type material came from Kerang, where the more typical form is abundant, and it is possible that var. *polymorphum* was based on some aberrant plant—perhaps functionally female.]

—Leaves *green above* (greyish-pubescent on under-side), coarsely and *irregularly serrate*,  $\pm$  *wrinkled*, the larger ones >20 mm. long; peduncles 1-4 cm. long, each bearing a *loose cyme* of 5-7 flowers (cooler shaded situations in forests and gorges, chiefly in E. highlands):

**T. corymbosum** R. Br. *Prodr. Flor. Nov. Holl.* 504 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1041 (1957).

*Vern.*: Forest Germander. *Distr.*: BJMN PSTVWZ—also S.A., Tas., N.S.W.

## AJUGA L. (1753)

**A. australis** R. Br. *Prodr. Flor. Nov. Holl.* 503 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 149, col. (1968); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1039 (1957); Galbraith, *Wildflowers Vict.* ed. 3: t. 138 (1967); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 304 (1965); Williamson, *Vict. Nat.* 42: t. 7 opp. 198 (1925); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 243 (1901); Burbidge, *Flor. Aust. Cap. Terr.* fig. 315 (1970).

*Vern.*: Austral Bugle. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[Great variations are noticeable in habit, flower-size and corolla-colour of Victorian populations at present grouped under the name *A. australis*, and it is likely that more than one species is involved. The description by Dr. O. Stapf in *Curtis's bot. Mag.* 156: t. 9320, col. (1933) of *A. grandiflora* fits a robust (to 1 ft. high or more), hairier, larger- and darker-flowered plant that is frequent in sandy tracts of the Mallee; but, until careful revisional work is carried out, it is deemed unwise to recognize any additional taxa in *Ajuga*.

The Eurasian glabrescent and stoloniferous Bugle, *A. reptans* L., is widely cultivated, e.g. on rock gardens, and it occasionally spreads to a limited extent; variegated forms are popular.]

### WESTRINGIA Sm. (1797)

1. Leaves in close whorls of 5 or 6, spreading at right angles to stem, rigid,  $\pm$  scabrid, linear, with margins so revolute as to conceal the under-surface; flowers white, very densely clustered in uppermost axils; calyx-teeth acuminate, almost as long as tube (alps & subalps of E. highlands, endemic in Victoria):

*W. senifolia* F. Muell. in *Trans. phil. Soc. Vict.* 1: 49 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 525, col. (1968); Boivin, *Proc. roy. Soc. Qd* 60: t. 9 fig. 18 & 19 (Jan. 1950).

*Vern.*: Alpine Westringia. *Distr.*: RSV.

- Leaves in whorls of 3 (occasionally 4) 2
2. Plant *glabrous* or nearly so; leaves  $\pm$  flat; flowers mauve to purple 5  
Plant with at least the young shoots *hoary-tomentose*; leaves narrow-linear to occasionally lanceolate, always with *strongly revolute margins* 3
3. Leaves  $\pm$  1 mm. wide, usually scabrid; calyx-lobes *narrow*, often *as long as tube*; corolla purplish (erect slender shrub to 5 ft. tall, in Mallee, N.E. & far E.):

*W. eremicola* A. Cunn. ex Benth. *Labiata. Gen. et Spec.* 459 (1834).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2 fig. 1063 A-B (1957); Boivin, *Proc. roy. Soc. Qd* 60: t. 9 fig. 36 & 37 (1950); *Curtis's bot. Mag.* 62: t. 3438, col. (1835); Burbidge, *Flor. Aust. Cap. Terr.* fig. 318 (1970).

*Vern.*: Slender Westringia. *Distr.*: BCHMVWZ—also S.A., N.S.W., A.C.T., Qd.

- Leaves 1-2 mm. wide; calyx-lobes *deltoid*, *much shorter than tube* 4
4. Flowers *white*, dotted with purple; leaves *glabrous above*, mostly <1 cm. long (sometimes <5 mm. and  $\pm$  deltoid); calyx-lobes to *one-third* the length of tube (twiggy divaricate shrub of open sandy ground in W. & N.W., frequent in Mallee):

*W. rigida* R. Br. *Prodr. Flor. Nov. Holl.* 501 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1038 E-F & 1063 c (1957); Boivin, *Proc. roy. Soc. Qd* 60: t. 9 fig. 32-33 (1950); Briquet in Engler, *Natürl. Pflfam.* IV 3A: 217 fig. 77 c (1895).

*Vern.*: Stiff Westringia. *Distr.*: ABCFJM—also W.A., S.A., Tas., N.S.W.

- Flowers *mauve*; leaves (also branches) densely *white-pubescent*, 1-2 cm. long; calyx-lobes *half* as long as tube (rare shrub of cliff crevices along Snowy R. gorge, E. Gippsland, where apparently endemic):

*W. cremnophila* N. A. Wakefield in *Vict. Nat.* 73: 186 (1957).

*Vern.*: Snowy River Westringia. *Distr.*: W.

5. Leaves with *midrib not or hardly perceptible, thick*, the margins *somewhat incurved*, wrinkled beneath, 1.5-3.0 mm. wide; calyx *pubescent*, the lobes slightly *shorter than tube* (endemic in Victoria, at centre of Little Desert and in Whipstick Scrub N. of Bendigo):

*W. crassifolia* N. A. Wakefield in *Vict. Nat.* 73: 187 (1957).

*Vern.*: Whipstick Westringia. *Distr.*: CM.

- Leaves with *prominent midrib*, the lamina *thin*, apex usually acute and margins *slightly recurved*, 2-8 mm. wide; calyx *glabrescent*, the lobes typically as long as or *longer than tube* (scattered along water-courses in Grampians, Lerderderg R., Goulburn R. & E. Gippsland):

*W. glabra* R. Br. *Prodr. Flor. Nov. Holl.* 501 (1810).

*W. violacea* F. Muell. in *Trans. phil. Soc. Vict.* 1: 49 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 90, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 55, col. (1969); Boivin, *Proc. roy. Soc. Qd* 60: t. 9 fig. 55 (1950); Jarman, *Aust. Plant Drawings* 18 & 19 (1930).

*Vern.*: Violet Westringia. *Distr.*: CNSW—also N.S.W., Qd.

[Victorian populations are chiefly referable to the following two varieties: var. *bacchi* (B. Boivin, ut *W. violacea* var., 1949) J. H. Willis in *Muelleria* 1: 145 (1967), having smaller narrower leaves in whorls of 4; and var. *williamsonii* (Willis & Boivin, ut sp., 1949) J. H. Willis in *Muelleria* 1: 145 (1967), also with quaternate leaves, very short floral bracteoles and narrower hairy calyx-tubes that are mostly longer than their lobes. The former inhabits the Lerderderg R. along its lower gorge tract, the latter parts of the Grampians, Lake Tyers and W. Tree Ck falls near Buchan. More typical ternate-leaved *W. glabra*, with long bracteoles, is to be found near the Timbarra R. south of Mt. Elizabeth.]

#### PROSTANTHERA Labill. (1806)

1. Corolla <1.5 cm. long, *white to mauve or purplish*, the lower lip *longer* than the upper; lower calyx-lip becoming *appressed* to the upper and enclosing the fruit 4  
Corolla  $\pm$  2 cm. long, *scarlet to yellow or greenish*, the lower lip *shorter or no longer* than upper; calyx-lips *equally dilated* at fruiting stage 2
2. Leaves 1.5-3 cm. long, ovate or lanceolate, with recurved margins; corolla *greenish, veined or streaked with violet* (stout, subalpine eastern shrub of Mts. Buffalo, Elizabeth, Ellery & Kaye, also Butcher's Ridge near Gelantipy and Yalmy R. sources):

*P. walteri* F. Muell. *Fragm. Phyt. Aust.* 7: 108 (1870).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 524, col. (1968); Reeves, *Vict. Nat.* 78: 350 (1962), also *ibid* 55: t. 15 opp. 193 (1939).  
*Vern.*: Monkey Mint-bush (Blotchy Mint-bush). *Distr.*: RWZ—also N.S.W.

[The typical form, on Mts. Ellery & Kaye, has relatively broader (often oval), thicker and more scabrid leaves than in populations from other parts of the eastern highlands.]

—Leaves <1 cm. long; corolla *not* veined with violet (small shrubs of sandy tracts in Mallee country) 3

3. Leaves *linear-terete*, channelled above, *straight*, spreading, mostly 4-6 mm. long; corolla usually *scarlet* (rarely yellow-greenish), sprinkled with microscopic hairs but margins *not* ciliate:

*P. aspalathoides* A. Cunn. ex Benth. *Labiata. Gen. & Spec.* 453 (1834).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 128, col. (1968); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 6, col. (1958); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1057 (1957).  
*Vern.*: Scarlet Mint-bush. *Distr.*: ABCFGHM—also S.A., N.S.W.

—Leaves *ovate* or *oblong*, *decurved* from base to apex and the margins  $\pm$  *recurved*, mostly 1-2 mm. long (rarely longer and flat); corolla *bluish-green*, rarely red, hairy and with *ciliate lips*:

*P. microphylla* Benth. *Labiata. Gen. & Spec.* 454 (1834)

forma *aeruginosa* J. H. Willis in *Vict. Nat.* 73: 200 (1957).

*P. chlorantha* sens. Ewart *Flor. Vict.* 983 (1931), *non* (F. Muell.) Benth. (1870).

*Vern.*: Small-leaf Mint-bush. *Distr.*: ABF—also S.A., ?N.S.W., Qd.

4. Flowers all *axillary*; floral leaves *similar* to those on the stems, but sometimes smaller 9

Flowers in terminal *leafless racemes*; floral leaves either absent, deciduous or modified into bracts 5

5. Leaves with petioles <2 mm. long or subsessile, *entire*, usually *revolute* at margins, mostly <5 mm. wide 8

Leaves with petioles 3 mm. long or more, *often toothed*, *flat*, broad (mostly >5 mm. wide) 6

6. Leaves *thick*, very *obtus*e, the lamina usually as wide as long (often *rotund*), *entire* or obscurely toothed, <10 mm. wide, the venation rather obscure; racemes markedly *bracteate*; calyx-lips equal; corolla purplish (widespread in moister valleys):

*P. rotundifolia* R. Br. *Prodr. Flor. Nov. Holl.* 509 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1052 (1957); Ewart, *Flor. Vict.* fig. 323 (1931); Derrick in Ewart, *Handb. For. Trees* t. 211 (1925); Fitch in Hooker f., *Flor. Tasm.* 1: t. 89, col. (1857); Atkinson in *Curtis's bot. Mag.* 150: t. 9061, col. (1925); Pescott, *Native Flowers Vict.* t. opp. 101 (1914).

*Vern.*: Round-leaf Mint-bush. *Distr.*: CDHJNRSVWZ—also S.A., Tas., N.S.W.



—Leaves *thin*, usually  $\pm$  pointed, the lamina much *longer than wide* (mostly 10-20 mm. broad), the venation often distinctly reticulate; racemes devoid of leafy bracts 7

7. Leaves *lanceolate*, acute, 1-4" long, with *numerous small acute teeth*; corolla *whitish*, *hirsute* inside and out, the throat often dotted with purple; calyx-lips subequal (or lower one smaller); one anther-appendage much longer than loculus (small trees, widespread in mountain forests and fern-gullies):

**P. lasianthos** Labill. *Nov. Holl. Plant. Specim.* 2: 18, t. 157 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 444, col. (1968); King & Burns, *Wildflowers Tasm.* 79, col. (1969); Ewart, *Handb. For. Trees* t. 212 (1925); Elliott in Harrison, *Handb. Trees & Shrubs S. Hemisph.* ed. 4: 266 (1967); Curtis in *Curtis's bot. Mag.* 50: t. 2434, col. (1823); Sulman, *Wild Flowers N.S.W.* 2: t. 53 (1914); Everard, *Wild Flowers World* t. 132 fig. D, col. (1970).

*Vern.*: Victorian Christmas-bush. *Distr.*: DKMNPRSTVWZ—also Tas., N.S.W., Qd.

[The var. *subcoriacea* F. Muell. ex Benth. *Flor. aust.* 5: 94 (1870) is a more stunted population restricted to mountain-tops of the Grampians and distinguishable by its smaller, thicker, less distinctly toothed leaves.]

—Leaves *ovate-elliptic*, bluntish at apex, rarely  $>1"$  long, with *few obtuse lobes or teeth* (sometimes entire); corolla *mauve to purple*, *slightly pubescent*; calyx-lips *almost equal*; neither anther-appendage exceeding the loculus (slender shrub of damp forests between Otway & Howe Ranges):

**P. melissifolia** F. Muell. *Fragm. Phyt. Aust.* 1: 19 (1858).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 409, col. (1968); Rosser, *Wildflowers Vict.* 59, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 81, col. (1969); Ross-Craig in *Curtis's bot. Mag.* 164: t. 9687, col. (1948), as var. *parvifolia*; Brooks, *Aust. native Plants* t. inter 112 & 113 (1959); *Wild Flowers Aust.* (Shell Oil Co. Publ.) 22 (?1931).

*Vern.*: Balm Mint-bush. *Distr.*: KNPSTZ—also ?N.S.W.

—As for the last, but calyx-lips manifestly *unequal* (the lower one longer and rather narrower than upper), the leaves obscurely toothed or entire, and a long anther-appendage on one loculus (widely-spreading, decumbent shrub along Cultivation Ck in W. Grampians):

**P. sp.**

8. Leaves shortly but distinctly *petiolate*, ovate to oblong, usually 1-2 cm. long or more; vestiture *bristly*; *both* anther-appendages exceeding the loculi (widely scattered, but uncommon):

**P. hirtula** F. Muell. ex Benth. *Flor. aust.* 5: 97 (1870).

*Vern.*: Hairy Mint-bush. *Distr.*: CDJNRWZ—also N.S.W.

[The var. *angustifolia* Benth. *Flor. aust.* 5: 97 (1870) has narrower, less hairy leaves and occurs at Genoa Peak in far E. Gippsland.]

—Leaves *sessile*,  $\pm$  cordate at base, often scabrous, rarely  $>1$  cm. long; vestiture *short and crisped*; anther appendages of *unequal length*, one short and not exceeding loculus:

**P. denticulata** R. Br. *Prodr. Flor. Nov. Holl.* 509 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 323, col. (1968); M.S. in *Curtis's bot. Mag.* 130: t. 7934, col. (1904).

*Vern.*: Rough Mint-bush. *Distr.*: CDHJMNRTWZ—also N.S.W.

9. Branches *hirsute*, bearing *opposite*, *widely spreading to deflexed spines* 8-15 mm. long; leaves mostly  $<5$  mm. long, ovate, often complicate; flowers pale lilac (slender, divaricate shrub of N. & W. Grampians, also Mt. Arapiles):

**P. spinosa** F. Muell. in *Trans. phil. Soc. Vict.* 1: 48 (1855).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1053 (1957); Galbraith, *Wildflowers Vict.* ed. 3: t. 139 (1967); Mueller, *Key Syst. Vict. Plants* 2: fig. 107 (1886); Mueller, *Plants indig. Colon. Vict.* t. 56 (1864/5); Jarman, *Aust. Plant Drawings* tt. 7 & 8 (1930).

*Vern.*: Spiny Mint-bush. *Distr.*: CDJ—also S.A., N.S.W.

—Branches *not spiny* 10

10. Leaves *obovate to orbicular*, flat or nearly so, mostly 4-6 mm. long; flowers often crowded, 10-15 mm. long, white with purple spots or sometimes wholly bright mauve (spreading alpine or subalpine shrub):

**P. cuneata** Benth. in *DC. Prodr.* 12: 560 (1848).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 505, col. (1968); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 4, col. (1962); Mass, *Flowers aust. Alps* 41 (1967); Ross-Craig in *Curtis's bot. Mag.* 167: new ser. t. 132, col. (1950); Fitch in Hooker f., *Flor. Tasm.* 1: t. 90, col. (1857); Burbidge, *Flor. Aust. Cap. Terr.* fig. 322 (1970).

*Vern.*: Alpine Mint-bush. *Distr.*: RSVW—Also Tas., N.S.W., A.C.T.

—Leaves *linear or oblong* 11

11. Leaf-margins *plane* or slightly incurved; flowers white or pale mauve 13

Leaf margins *revolute* 12

12. Leaves *glabrous, shiny*, mostly 1 cm. long or more; corolla *white* with yellow dots (mountains of E. Gippsland, also Cobungra):

**P. phyllifolia** F. Muell. *Fragm. Phyt. Aust.* 1: 19 (1858).

*Illust.*: Chaffer, *Aust. Plants I*<sup>a</sup>: 13 (1960).

*Vern.*: Spiked Mint-bush. *Distr.*: SVWZ—also N.S.W., Qd.

—Leaves *decussate*, *scabrous* (sometimes *muricate*), *dull*,  $<1$  cm. long; corolla *violet* (scattered through E. & W. highlands, usually on granite or sandstone, and apparently endemic):

*P. decussata* F. Muell. *Fragm. Phyt. Aust.* 1: 126 (1859).

*Vern.*: Dense Mint-bush. *Distr.*: NRSW.

13. Shrub small, slender, often low,  $\pm$  pubescent; leaves sparse, 1 cm. long or less; calyx-lips of equal width,  $< 6$  mm. long; corolla to 1 cm. long, pale mauve (scattered from Grampians to Bendigo and Gippsland):

*P. saxicola* R. Br. *Prodr. Flor. Nov. Holl.* 509 (1810)

var. *bracteolata* J. H. Willis in *Vict. Nat.* 73: 199 (1957).

*P. debilis* F. Muell. *Fragm. Phyt. Aust.* 8: 147 (1874).

*Vern.*: Slender Mint-bush. *Distr.*: DJMS.

[The typical var. *saxicola* is restricted to N.S.W. where, in the Warrumbungle Ranges, is a form having long bracteoles (2-4 mm.) comparable with those in the Victorian var. *bracteolata*.]

—Shrub tall, glabrous or almost so; leaves 1-4 cm. long, mostly narrow-linear,  $\pm$  incurved at margins, odourless; upper calyx-lip twice as wide as the lower one, 7-9 mm. long; corolla white,  $> 1$  cm. long (Cent. & N. regions, chiefly on granite):

*P. nivea* A. Cunn. ex Benth. *Labiata. Gen. & Spec.* 452 (1834).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 76, col. (1969); Althofer, *Aust. Plants* 1<sup>a</sup>: 1 (1960); Derrick in Ewart, *Handb. For. Trees* t. 210 (1925); Fitch in *Curtis's bot. Mag.* 93: t. 5658, col. (1867).

*Vern.*: Snowy Mint-bush. *Distr.*: GHLMNPR—also N.S.W., Qd.

[In Ewart's *Flor. Vict.* 984-85 (1931), *P. violacea* R. Br. (from Cape Howe) and *P. incisa* R. Br. (from Cann River) are admitted as rare species confined in Victoria to E. Gippsland. The nearest locality represented by any specimen of the former, small-leaved species at Melbourne Herbarium is Twofold Bay, N.S.W., and it would seem that Cape Howe was an erroneous record. The admittance of *P. incisa*, on the basis of a Cann River record, is certainly the result of misidentification. Both of these East Coast species have the lower lip of calyx narrower and slightly longer than the upper; they are briefly described in Beadle, Evans & Carolin's *Handb. vasc. Plants Sydney District* 420-21 (1962).]

## SCUTELLARIA L. (1753)

Plant  $\pm$  glabrous or sprinkled with minute simple hairs; leaves ovate to almost orbicular, entire or slightly crenate-lobed,  $\pm 1$  cm. long; corolla  $\pm 6$  mm. long, its lower lip only slightly exceeding the upper (widespread in damp shaded situations):

*S. humilis* R. Br. *Prodr. Flor. Nov. Holl.* 507 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1051 (1957); Burbidge, *Flor. Aust. Cap. Terr.* fig. 319 (1970).

*Vern.*: Dwarf Skullcap. *Distr.*: EJKNPVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

Plant  $\pm$  villous, with short glandular hairs; leaves  $\pm$  lanceolate in outline, coarsely toothed, the largest 3-4 cm. long; corolla  $\pm$  10 mm. long, its lower lip manifestly longer than upper (weak ascending herb of far E. Gippsland):

*S. mollis* R. Br. *Prodr. Flor. Nov. Holl.* 507 (1810).

*Vern.*: Soft Skullcap. *Distr.*: Z—also N.S.W.

\*LAVANDULA L. (1753)

\**L. stœchas* L. *Spec. Plant.* 2: 573 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1046 (1957); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2171, col. (1926); Coste, *Flor. Franc.* 3: fig. 2836 (1906); Briquet in Engler, *Natürl. PflFam.* IV 3A: 361 fig. 105 c (1897); Kerner, *Pflanzenleben* 2: 180 fig. 4 (1891); Everard, *Wild Flowers World* t. 37 fig. G, col. (1970); Goulandris, *Wild Flowers Greece* t. opp. 90, col. (1968).

*Vern.*: Topped Lavender. *Distr.*: NR—also S.A., N.S.W.

\*MARRUBIUM L. (1753)

\**M. vulgare* L. *Spec. Plant.* 2: 583 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 106, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1047 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 51, col. (1958)—habit; Richardson, *J. Dep. Agric. S. Aust.* 56: 265-6 (1953); Clarke, *Bull. Dep. Agric. S. Aust.* n. 343: t. opp. 14, col. (1939), also *ibid.* n. 406: 103 (1949); Wauer in Ewart, *Weeds . . . Vict.* t. 21 opp. 52, col. (1909); Ross-Craig, *Drawings Brit. Plants* 24: t. 25 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1149 (1961); Burbidge, *Flor. Aust. Cap. Terr.* fig. 316 (1970).

*Vern.*: Horehound. *Distr.*: ABCDEFHJKLMNPRUVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

\*NEPETA L. (1753)

\**N. cataria* L. *Spec. Plant.* 2: 570 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 24: t. 19 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1147 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4381 (1951); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2210, col. (1926); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 226 fig. 3, col. (1927).

*Vern.*: Catmint. *Distr.*: EW—also S.A., Tas., N.S.W., N.Z.

PRUNELLA L. (1753)

Plant only sparingly pubescent; upper leaves entire or shallowly toothed; points on lower lip of calyx no longer than upper lip; corolla 10-14 mm. long, violet, rarely pure white (very widespread low herb of damp places):

*P. vulgaris* L. *Spec. Plant.* 2: 600 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1038 G-J & 1059 (1957); Ross-Craig, *Drawings Brit. Plants* 24: t. 23 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1126

(1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4384 (1951); Clements, *Natn. geogr. Mag.* 51: t. 16 fig. 4, col. (1927); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3255 & 3256 (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2262, col. (1927), as *Brunella vulgaris*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 321 (1970).

*Vern.*: Self-heal. *Distr.*: DEJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Plant *copiously hairy* (the stems white-hirsute); upper leaves *lyrate or ± pinnatifid*; points on lower lip of calyx *longer* than upper lip; corolla *± 15 mm. long, creamy-white* (localized in Heywood district):

\**P. laciniata* (L.) L. *Spec. Plant.* ed. 2, 2: 837 (1763).

*P. vulgaris* L. var. *laciniata* L. *Spec. Plant.* 2: 600 (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 2: fig. 1127 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3254 a & b (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2262 b, col. (1927), as *Brunella alba*; Coste, *Flor. Franc.* 3: fig. 2963 (1906), as *B. alba*; Reichenbach, *Icon. Flor. germ.* 18: t. 1223 fig. III, col. (1855), as *B. laciniata*.

*Vern.*: Cut-leaf Self-heal. *Distr.*: E—also Tas., N.S.W., N.Z.

#### \**LAMIUM* L. (1753)

At least the upper bracts *sessile*, almost stem-clasping and *distinct* from normal foliage; whorls of flowers few, rather *distant*; calyx-teeth *connivent* in fruit (widespread weed of cultivation in warmer W., N.W. & N. districts):

\**L. amplexicaule* L. *Spec. Plant.* 2: 579 (1753).

*Illust.*: Mercer in Hurst, *Poison Plants N.S.W.* 343 (1942); Mercer in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 64 (1958); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 35 B (1951); Allan, *ibid.* 83: fig. 88 C-D (1940); Ross-Craig, *Drawings Brit. Plants* 24: t. 36 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1136 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4386 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 228 fig. 1, col. (1927); Burbidge, *Flor. Aust. Cap. Terr.* fig. 317 (1970).

*Vern.*: Henbit Dead-nettle. *Distr.*: ABCFGMN—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Bracts all *stalked* and *resembling the leaves*; whorls of flowers *crowded*; calyx-teeth *spreading* in fruit (apparently confined to Daylesford & Clunes districts):

\**L. purpureum* L. *Spec. Plant.* 2: 579 (1753).

*Illust.*: Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 88 E-F (1940); Ross-Craig *Drawings Brit. Plants* 24: t. 39 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1139 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 228 fig. 2, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2217, col. (1927); Coste, *Flor. Franc.* 3: fig. 2904 (1906).

*Vern.*: Red Dead-nettle. *Distr.*: JN—also S.A., Tas., N.Z.

## \*MOLUCCELLA L. (1753)

\**M. lævis* L. *Spec. Plant.* 2: 587 (1753).

*Illust.*: Bailey, *Weeds & susp. poison. Plants* Qd fig. 254 (1906); Hay & Syngé, *Dict. gdn Plants* t. 346, col. (1969); Bailey, *Standard Cycl. Hort.* 2: fig. 2381 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3303 (1927); Curtis's *bot. Mag.* 43: t. 1852, col. (1816).

*Vern.*: Molucca Balm (Bells of Ireland). *Distr.*: GH—also W.A., N.S.W., Qd.

## \*BALLOTA L. (1753)

\**B. nigra* L. *Spec. Plant.* 2: 582 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 24: t. 42 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1134 (1961); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2245, col. (1927), as *B. fetida*; Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3269 & 3270 (1927); Coste, *Flor. Franc.* 3: fig. 2942 (1906).

*Vern.*: Black Horehound. *Distr.*: N.

[The localized Victorian population (Williamstown) is referable to subsp. *fetida* Hayek, having broadly ovate calyx-teeth (only  $\pm$  2 mm. long) that contract suddenly into an acuminate apex.]

## \*STACHYS L. (1753)

\**S. arvensis* L. *Spec. Plant.* ed. 2, 2: 814 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1062 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 53, col. (1958); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 35 c (1951); Hope in Bailey & Gordon, *Plants poison. & injur. Stock* t. opp. 65 (1887); Maiden, *Weeds N.S.W.* t. opp. 72, col. (1920); Ross-Craig, *Drawings Brit. Plants* 24: t. 31 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1129 (1961); Adams, *Ill. Flor. Pacific States* 3: fig. 4389 (1951); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2240, col. (1927).

*Vern.*: Stagger Weed (Field Woundwort, Hedge-nettle). *Distr.*: JKNRTVWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

## SALVIA L. (1753)

1. Flowers in *opposite pairs*; calyx with *short white curved hairs* on the 10 high flange-like ribs; leaves narrow-oblong to  $\pm$  lanceolate, mostly <1 cm. wide, *obscurely toothed* to entire; corolla pale blue, 8-9 mm. long (*greyish-hoary* annual with *sessile* glands and strong minty aroma; sporadic in warmer W. districts, e.g. Heathcote, Castlemaine, Lockington, Murrayville):

\**S. reflexa* Hornem. *Enum. Plant. Hort. Hafn.* 34 (1807).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 52, col. (1958); St. George-Grambauer, *J. Dep. Agric. S. Aust.* 60: 259 (1957); Hurst, *Poison Plants N.S.W.* 347 (1942); Everist, *Common Weeds Farm & Pasture* fig. 91 (1957); Meadly, *Weeds W. Aust.* 126 col., 129 (1965); Agric. Gaz. N.S.W. 253 (1935).

*Vern.*: Mintweed. *Distr.*: MN—also S.A., N.S.W., Qd.

- Flowers in false whorls of 6; calyx hirsute with *straight bristly hairs*; leaves >1 cm. wide (*green herbs, viscid from stalked glands*) 2
2. Leaves mostly >2.5 cm. wide, *coarsely toothed* or lobed, *strongly rugose*; flowering calyx 6-8 mm. long, the upper lip *trifid*; corolla blue to lilac or purplish, 8-12 mm. long (very widespread perennial weed):

\**S. verbenaca* L. *Spec. Plant.* 1: 25 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1049 (1957); Black in Summers, *J. Dep. Agric. S. Aust.* 14: 497 (1910); Davey, *J. Dep. Agric. Vict.* 21: 106 (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 320 (1970).

*Vern.*: Wild Sage. *Distr.*: ABCDFGHJKMNPRW—also W.A., S.A., N.S.W., A.C.T., N.Z.

[The var. *vernalis* Boiss. *Voy. Bot. l'Espagne* 2: 484 (1841) differs in its powerful fœtid odour, ± villous indumentum, more dissected foliage and green (never purplish) calyces. It appears to be restricted to the far N.W. Mallee (Hattah & Yatpool districts). Victorian populations currently referred to *S. verbenaca* call for critical taxonomic investigation. Many occurrences, in fact, seem nearer to the related W. European and N. African *S. horminoides* Pourr. in *Mém. Acad. Sci. Inscript. Toulouse* 3: 327 (1788), differing from *S. verbenaca* (sens. strict.) in its relatively broader radical leaf-blades (usually less than twice as long as broad), often deeply purple-tinted and less pilose calyx, and violet-blue (not lilac) corolla which has two white spots at the base of the lower lip and may frequently be cleistogamous. *S. horminoides* is reported as "locally abundant" over a wide area in Tasmania, by W. M. Curtis in her *Student's Flor. Tasm.* 3: 547 (1967), and it is excellently depicted in Stella Ross-Craig's *Drawings Brit. Plants* 24: t. 17 (1967).]

- Leaves <2.5 cm. wide, *shallowly crenate-toothed*, *hardly rugose*; flowering calyx 2-3 mm. long, the upper lip *entire*; corolla inconspicuous, <4 mm. long (rare plant of river valleys in E. Gippsland, eastward from Bairnsdale):

*S. plebeia* R. Br. *Prodr. Flor. Nov. Holl.* 501 (1810).

*Illust.*: Bailey, *Weeds & susp. poison Plants Qd* fig. 248 (1906); Basu, *Ind. med. Plants* t. 764 (1918); Somoku Dzusetsu, ed. Makino (*Icon. Plant. Nippon*) 11: t. 19 (1912).

*Vern.*: Austral Sage. *Distr.*: WZ—also N.S.W., Qd.

[Ewart, *Flor. Vict.* 993 (1931), recorded the large-leaved blue-flowered European *S. pratensis* L. (Meadow Clary) and *S. sclarea* L. (Common Clary) as both "frequent in N.E. Victoria". The basis for such statements is unknown, since Melbourne Herbarium lacks any Victorian-grown specimen of these species, nor has either of them been observed in the State during the past four decades.]

### \*MELISSA L. (1753)

\**M. officinalis* L. *Spec. Plant.* 2: 592 (1753).

*Illust.*: Black, *Naturalised Flor. S. Aust.* 125 (1909); Butcher, *New ill. Brit. Flor.* 2: fig. 1122 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4422 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 54: t. 230 fig. 3, col. (1927); Poinset in Bonnier, *Flor.*

*compl. Franc., Suisse & Belg.* 8: fig. 2196, col. (1926); *Coste, Flor. Franc.* 3: fig. 2880 (1906).  
*Vern.*: Common Balm. *Distr.*: CJLUVW—also S.A., Tas., N.S.W.

## \*CLINOPODIUM L. (1753)

\**C. vulgare* L. *Spec. Plant.* 2: 587 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 24: t. 15 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1121 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3201 c-e (1927), as *Satureja vulgaris*; Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2189, col. (1926), as *Calamintha Clinopodium*.  
*Vern.*: Wild Basil. *Distr.*: NST.

## LYCOPUS L. (1753)

*L. australis* R. Br. *Prodr. Flor. Nov. Holl.* 500 (1810).

*Illust.*: Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 247 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 314 (1970).  
*Vern.*: Australian Gipsywort (Water Horehound). *Distr.*: EJKMNRTVZ—also S.A., Tas., N.S.W., A.C.T., Qd.

## MENTHA L. (1753)

1. False whorls of flowers forming leafless terminal, spike-like racemes; leaves sharply serrated (widely dispersed garden escapes of wet places) 6  
 False whorls in the axils of floral leaves 2
2. Plant greyish-villous; leaves ovate to  $\pm$  orbicular, <1 cm. broad; whorls distant, dense, many-flowered; corolla lilac, twice as long as calyx which has unequal teeth (widespread, highly aromatic herb of damp places):

\**M. pulegium* L. *Spec. Plant.* 2: 577 (1753).

*Illust.*: Honey *Flor. Vict.* (Dep. Agric.) ed. 5: 124 (1949); Ross-Craig, *Drawings Brit. Plants* 24: t. 7 (1967); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 304 (1957); Butcher, *New ill. Brit. Flor.* 2: fig. 1098 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4461 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: t. 224 fig. 1, col. (1927); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2173, col. (1926).  
*Vern.*: Pennyroyal. *Distr.*: CDJKMNIRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

- Plant green, glabrous or sparsely hairy; whorls loose, often few-flowered 3
3. Flowers few (2-8) in whorl; leaves <2 cm. long or, if ever >2 cm., then oblong and entire 5  
 Flowers numerous (10 or more) in whorl; leaves >2 cm. long, ovate to lanceolate, often  $\pm$  toothed 4



4. Leaves *acute* at apex, entire or faintly toothed; pedicels *much shorter* than calyx; corolla white, *slightly exceeding* calyx (widespread plant of swamps and stream-banks):

*M. australis* R. Br. *Prodr. Flor. Nov. Holl.* 505 (1810).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 107, col. (1965); Garnet, *Wildflowers Wilson's Prom.* fig. 704 (1971).

*Vern.*: River Mint. *Distr.*: ABEGJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W. A.C.T., Qd, Cent. Aust:

- Leaves *obtuse* at apex, conspicuously toothed; pedicels at least *as long as* calyx; corolla white to lilac, *twice as long as* calyx (plant of shaded forest-land in E. & W. highlands):

*M. laxiflora* Benth. in *DC. Prodr.* 12: 174 (1848).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 137 (1969).

*Vern.*: Forest Mint. *Distr.*: DEJKNRSTVWZ—also N.S.W., A.C.T.

5. Leaves  $\pm$  *oblong*, not broader towards the base, entire; calyx-lobes *deltoid*, much shorter than tube; corolla white (chiefly W. & N. districts)

*M. satureioides* R. Br. *Prodr. Flor. Nov. Holl.* 505 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1044 (1957); Payne in Bailey *Weeds & susp. poison. Plants Qd* fig. 246 (1906).

*Vern.*: Creeping Mint (Native Pennyroyal). *Distr.*: ACDEHJKLMNRSVW—also W.A., S.A., N.S.W., Qd.

- Leaves broadly to narrowly *ovate*, broader towards base, sometimes obscurely toothed; calyx-lobes *lanceolate*, acuminate, almost *as long as* tube; corolla usually lilac (widespread in damp places):

*M. diemenica* Spreng. *Syst. Veg.* 2: 724 (1825).

*M. gracilis* R. Br. *Prodr. Flor. Nov. Holl.* 505 (1810), non Sole (1798).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1043 (1957), as *M. gracilis*.

*Vern.*: Slender Mint. *Distr.*: ACDEJKMNRTVWXZ—also S.A., Tas., N.S.W., A.C.T.

[The var. *serpyllifolia* (Benth., *ut sp.*) J. H. Willis in *Muelleria* 1: 144 (1967), chiefly of near-coastal heaths, is smaller in all its parts; leaves are ovate, sessile and 5-10 mm. long, the flowers up to 4 but often only 1 per leaf-axil.]

6. Leaves *subsessile* (petioles, if present, <3 mm. long),  $\pm$  *lanceolate*, with strong spearmint odour; flowers in a slender *cylindrical spike* to 6 cm. long, the whorls becoming *separated*; stamens *exserted*:

\**M. spicata* L. *Spec. Plant.* 2: 576 (1753).

*M. viridis* L. *l.c.*

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1045 (1957); Ross-Craig, *Drawings Brit. Plants* 24: t. 3 (1967); Butcher, *New ill. Brit. Flor.* 2: fig. 1108 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4456 (1951); Hegi, *Ill. Flor. Mittel-Eur.* 5<sup>4</sup>: fig. 3234 & 3235 (1927); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 8: fig. 2177 b, col. (1926), as *M. viridis*.

*Vern.*: Spearmint. *Distr.*: DJNSVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Leaves *petiolate* (petioles 8-20 mm. long), *ovate*, with lemony odour somewhat reminiscent of eau-de-Cologne; flowers in *heads* (or dense oblong spikes) to 2 cm. long, the whorls *not distinct*; stamens *enclosed*:

\**M. × piperita* L. *Spec. Plant.* 2: 576 (1753)

(*M. aquatica* L. × *M. spicata* L.)

var. *citrata* (Ehrh.) Briq. in Wildeman & Durand *Prodr. Flor. Belg.* 3: 694 (1899).

*M. citrata* Ehrh. *Beitr. Naturk.* 7: 150 (1792).

*Illust.*: Butcher, *New ill. Brit. Flor.* 2: fig. 1105 (1961); Abrams, *Ill. Flor. Pacific States* 3: fig. 4458 (1951); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 302 (1957)—all as *M. citrata*.

*Vern.*: Lemon Mint (Bergamot Mint). *Distr.*: CEMSV.

[Opinions vary widely on the taxonomic status of this mint, some authorities regarding it as a distinct species, *M. citrata*, others preferring to ally or even to synonymize it with *M. aquatica*. Plants approaching the typical form of *M. piperita* (the Peppermint), i.e. with lanceolate leaves and flowers in interrupted oblong spikes, have been noted near Sassafras in the Dandenong Ranges.

*M. rotundifolia* (L.) Huds. (Apple Mint) is grown in herb gardens and occasionally escapes to a limited extent; this introduction differs from *M. spicata* (with which it may hybridise) in its broadly oblong to suborbicular, obtuse *downy leaves* (whitish-tomentose beneath) that are typically rugose.]

### PLECTRANTHUS L'Hérit. (1785)

*P. parviflorus* Willd. *Hort. berol.* 1: t. 65 (1806).

*Illust.*: Willdenow (*l.c.*); Hamilton, *Proc. Linn. Soc. N.S.W.* 23<sup>4</sup>: t. 26 fig. 9-11 (1899)—flowers; Bailey, *Qd agric. J.* 28: 199 t. 41 (1912); Blake, *Contr. Qd Herb.* n. 9: 63 fig. 4b & 97 fig. 21 (1971). [Other illustrations in Australian books and periodicals purporting to represent *P. parviflorus*, e.g. Black's *Flor. S. Aust.* ed. 2: fig. 1050 (1957) and Pescott's *Native Flowers Vict.* t. opp. 108 (1914), belong to different species—see "A revision of *Plectranthus* (Labiatae) in Australasia" by S. T. Blake in *Contr. Qd Herb.* n. 9: 1-121 (Apr. 1971).]

*Vern.*: Cockspur Flower. *Distr.*: JSVWZ—also N.S.W., Qd, Hawaii.

[Three other introduced perennials in the *Labiatae*, viz. *Rosmarinus officinalis* L. (Rosemary), *Origanum vulgare* L. (Marjoram) and *Leonotis leonurus* (L.) Ait. f. (Lion's-ear), sometimes tend to persist by seedling growth, but they seldom spread beyond gardens and can hardly be regarded as spontaneous here. In Ewart's *Flor. Vict.* 978 & 993 (1931) the first two fragrant species, both European, are treated as naturalized. *Leonotis leonurus* is a tall South African shrub with large

(1-2") orange to scarlet flowers in spectacular leafy whorls; it is admirably depicted by Barbara Everard in *Wild Flowers World* t. 63 fig. B, col. (1970).]

### Family MYOPORACEÆ

Corolla *regular* or nearly so,  $\pm$  campanulate, *white* (sometimes with purple dots) *Myoporum* (p. 598)

Corolla *zygomorphic*, seldom white, often *brightly coloured* *Eremophila* (p. 600)

### MYOPORUM Soland. ex Forst. f. (1786)

1. Plant low, *procumbent*, spreading over the ground; leaves thick, oblong to linear-cuneate, rarely  $>1"$  long; fruit globular, purple, 5-7 mm. diam. (scattered in W. districts, usually on  $\pm$  saline flats):

*M. parvifolium* R. Br. *Prodr. Flor. Nov. Holl.* 516 (1810).

*Illust.*: *Curtis's bot. Mag.* 41: t. 1693, col. (1814); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 62 (1886), as *M. humile*; Wettstein in Engler, *Natürl. PflFam.* IV 3 B: 358 fig. 144 N-s (1895), as *M. humile*; Nicholson, *Ill. Dict. Gardening* 2: fig. 622 (1886).

*Vern.*: Creeping Myoporum. *Distr.*: ACDGKN—also W.A., S.A., Tas. (Flinders Id).

—Plant *erect*, woody,  $>3$  ft. high

2. Leaves *narrow-linear*, lax, mostly  $<2$  mm. wide; flowers copious *on upper side* of slender horizontal to drooping branches; stamens long-exserted; ovary *truncate* at summit, 2-locular (rare shrub to 8 ft. in rain-shadow belt of upper Snowy & Deddick R. region, E. Gipps-land):

*M. floribundum* A. Cunn. ex Benth. in Endl. et al. *Enum. Plant. Hueg.* 78 (1837).

*Illust.*: Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 58 (1886).

*Vern.*: Slender Myoporum. *Distr.*: WZ—also N.S.W.

—Leaves always  $>3$  mm. broad; flowers *not* noticeably secund; ovary *rounded or pointed* at summit

3. Fruit ovate, *flattened, acute, dry*, 5-7 mm. long, 2-locular (small manna-yielding tree, with narrow serrulate leaves and rough tessellately fissured bark, in Wimmera & Mallee):

*M. platycarpum* R. Br. *Prodr. Flor. Nov. Holl.* 516 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 172, col. (1968); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 12 n. 321 (1965); Ellery in Ewart, *Handb. For. Trees* t. 217 (1925); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 60 (1886); Cannon, *Publ. Carnegie Instn* n. 308: tt. 17 & 18 (1921).

*Vern.*: Sugarwood ("Sandalwood"—S.A.). *Distr.*: ABCFGHM—also S.A., N.S.W., Qd.

- Fruit *globular*, *obtuse*, mostly *fleshy*, often coloured 4  
 4. Leaves mostly <1 cm. wide, *entire*, tapered at apex (shrubs of drier inland tracts in W.) 6  
     Leaves >1 cm. wide, *serrulate* or, if ever *entire*, then plants coastal and thick-leaved; ovary 2- to 3-locular 5  
 5. Leaves *thin*, very *sticky*, always *finely toothed*; calyx 4-5 mm. long; stamens manifestly *exserted*; drupe  $\pm$  5 mm. diam. (widespread shrub of rocky places in W., with isolated occurrences at Lakes Entrance and Wilson Prom.):

*M. viscosum* R. Br. *Prodr. Flor. Nov. Holl.* 516 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 212, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 145 (1967); Brooks, *Aust. native Plants* t. opp. 112 (1959); Hutchinson, *Fam. flowering Plants* ed. 2, 1 (Dicotyledons): fig. 339 (1959); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 66 (1886); Garnet, *Wildflowers Wilson's Prom.* fig. 737 (1971).

*Vern.*: Sticky Boobialla. *Distr.*: CDEGHJNPTW—also W.A., S.A., N.S.W.

- Leaves *thick*, hardly *sticky*, bluntly *toothed* or *entire*; calyx 2-3 mm. long; stamens *not* *exserted*; drupe  $\pm$  8 mm. diam. (frequent coastal shrubs) to small spreading trees with tessellated bark, also far W.):

*M. insulare* R. Br. *Prodr. Flor. Nov. Holl.* 516 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 287, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 148 (1967); Ewart, *Flor. Vict.* fig. 329 (1931); Ellery in Ewart, *Handb. For. Trees* t. 218 (1925); Lee, *Wild Life (Melb.)* 8: 44 (1945); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 72 (1886); H. B. in Brown, *For. Flor. S. Aust.* Pt 5, col. (1885).

*Vern.*: Common Boobialla. *Distr.*: CDEKNPTWZ—also W.A., S.A., Tas., N.S.W.

6. Flowers *erect*, *bearded* inside; ovary 3- to 5-locular; drupe *purplish* (leaves rather *thin*, very *acute*, 5-10 mm. broad, seldom more; rare):

*M. montanum* R. Br. *Prodr. Flor. Nov. Holl.* 515 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1112 E-I (1957); Ellery in Ewart, *Handb. For. Trees* t. 219 (1925), as *M. Dampieri*; Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 69 (1886), as *M. Dampieri*.

*Vern.*: Waterbush (Native Myrtle—S.A.). *Distr.*: AHM—also S.A., N.S.W., Qd, N. Terr., Cent. Aust.

- Flowers *nodding*, *glabrous* inside or nearly so; ovary 2-locular; drupe *yellow* (leaves *thick*, 3-6 mm. broad, mostly 1-2" long):

*M. deserti* A. Cunn. ex Benth. in Endl. et al. *Enum. Plant. Hueg.* 78 (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1113 (1957); King in Hurst, *Poison Plants N.S.W.* 389 (1942); Hope in Bailey & Gordon, *Plants poison. & injur. Stock*

t. opp. 61 (1887); Myers in Turner, *Forage Plants Aust.* t. opp. 40 (1891); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 68 (1886).  
*Vern.*: Turkey-bush (Dogwood—N.S.W.). *Distr.*: ACFGMNR—also W.A., S.A., N.S.W., Qd.

### EREMOPHILA R. Br. (1810)

1. Corolla with upper lip 2-lobed and lower lip 3-lobed, or the lobes  $\pm$  equal 3  
 Corolla with upper lip 4-lobed, *deeply separated* from lower 1-lobed lip, red to greenish-yellow; sepals imbricate at base 2
2. Pedicels *shorter* than calyx, *straight, stellate-hairy*; sepals *lanceolate*; corolla not spotted (widespread from Wimmera to the far N.W. Mallee):

*E. glabra* (R. Br.) Ostenfeld in *Biol. Medd., Kbh.* 3<sup>a</sup>: 119 (1921).

*Stenochilus glaber* R. Br. *Prodr. Flor. Nov. Holl.* 517 (1810).

*Illust.*: Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 38 (1886), as *E. Brownii*; Cannon, *Publ. Carnegie Instn* n. 308: t. 17 (1921), as *E. Brownii*; *Curtis's bot. Mag.* 45: t. 1942, col. (1817), as *Stenochilus glaber*.

*Vern.*: Common Emu-bush (Tar-bush—S.A.). *Distr.*: ABCFGHJ—also W.A., S.A., Cent. Aust., ?N.S.W.

[Plants are quite variable in size, indumentum, leaf-shape and flower-colour. The var. *viridiflora* (F. Muell. ex Benth., ut *E. brownii* var.) J. M. Black *Flor. S. Aust.* 529 (1929) occurs frequently in the Victorian Mallee and may be distinguished from the typical form by its more procumbent habit, densely stellate-hoary foliage and paler greenish flowers.]

—Pedicels *much longer* than calyx, with prominent *sigmoid flexure*, *glabrous*; sepals *ovate*; corolla usually *spotted inside* (Murray Mallee, extending S.E. to Sea Lake, the branchlets  $\pm$  hoary with minute *simple hairs*):

*E. maculata* (Ker) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 297 (1858).

*Stenochilus maculatus* Ker in *Edwards's bot. Reg.* 8: t. 647, col. (1822).

*Illust.*: Hart in Ker (*l.c.*); King in Hurst, *Poison Plants N.S.W.* 385 (1942); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 62 (1958); Dell in Gardner, *Wild-flowers W. Aust.* 139, col. (1959); Macadam, *Agric. Gaz. N.S.W.* 77: 76 (1966); Galbraith, *Wildflowers Vict.* ed. 3: t. 147 (1967); Chippendale, *Wild-flowers Cent. Aust.* 85, col. (1968); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 35 (1886); Everard, *Wild Flowers World* t. 132 fig. A, col. (1970); Kraehenbuehl, *Vict. Nat.* 88: 228 (1971).

*Vern.*: Spotted Emu-bush (Native Fuchsia—S.A.). *Distr.*: AFG—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

3. Leaves <15 mm. long (often <10 mm.); flowers blue to lilac 8  
 Leaves >15 mm. long (mostly >20 mm.) 4

4. Calyx-lobes manifestly *imbricate* at base, ovate, *acute*, 3-4 mm. wide; corolla creamy-white or pink, the expanded limb  $\pm$  2 cm. wide (very rare glabrous shrubs of Murray Mallee in extreme N.W. Vic.) 7  
Calyx-lobes *never imbricate* at base, either  $< 3$  mm. wide or obtuse 5
5. Leaves  $> 3$  mm. wide (often 3-6" long), with *straight* points; sepals *lanceolate*, *acute*  $\pm$  4 mm. long; corolla dull *red*, 1" long or more; drupe *succulent*, *glabrous*, dark purplish (tall shrub with  $\pm$  pendulous foliage, widespread in N. & N.W.):

*E. longifolia* (R. Br.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 295 (1858).

*Stenochilus longifolius* R. Br. *Prodr. Flor. Nov. Holl.* 517 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 142, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1115 (1957); Vincent in Ewart, *Handb. For. Trees* t. 213 (1925); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 12 n. 320 (1965); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 13 (1886); Wettstein in Engler, *Natürl. PflFam.* IV 3 B: 358 fig. 144 A-G (1895), as *Pholidia longifolia*.

*Vern.*: Berrigan (Native Plum Tree). *Dist.*: ABCFGHM—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Leaves 1-3 mm. wide, with *hooked* points; sepals *oblanceolate*, *obtuse*,  $> 5$  mm. long; corolla *white*, *pinkish* or *lilac*; drupe *dry*, *hoary-pubescent* (shrubs of Murray Mallee) 6

6. Leaves 3-9 cm. long, *hoary*, never viscid, often *opposite*; calyx *hoary*; corolla 20 mm. long or more, ivory-white or suffused with pink, *glabrous* externally (shrub or small tree, formerly frequent from Swan Hill into far N.W.):

*E. oppositifolia* R. Br. *Prodr. Flor. Nov. Holl.* 518 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 140, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1114 (1957); Galbraith, *Wildflowers Vict.* ed. 3: t. 146 (1967); Vincent in Ewart, *Handb. For. Trees* t. 214 (1925); Myers in Turner, *Forage Plants Aust.* t. opp. 41 (1891); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 24 (1886).

*Vern.*: Twin-leaf Emu-bush (Weeooka—aborig.). *Dist.*: AFG—also W.A., S.A., N.S.W., Qd.

—Leaves  $< 3$  cm. long, *glabrous resinous-viscid*, always *alternate*; calyx *glabrous*, viscid; corolla  $< 15$  mm. long, *pale lilac*, *pubescent* externally (rare shrub W. from Merbein, also Boundary Bend—1 bush):

*E. sturtii* R. Br. in Sturt *Narr. Exped. Cent. Aust.* 2: app. 85 (1849).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1112 A-C (1957); Hill in Beard, *Aust. Plants* 4: 252, col. (1968); King in Maiden, *For. Flor. N.S.W.* 7: t. 247 fig. I-0 (1920); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 27 (1886).

*Vern.*: Narrow-leaf Emu-bush. *Dist.*: AF—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

7. Leaves  $< 5$  cm. long,  $< 3$  mm. wide; corolla *pinkish*; stamens *enclosed*; fruit *narrow-oblong*,  $\pm$  10 mm. long (twiggy divaricate shrub to 9 ft.):

*E. polyclada* (F. Muell.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 294 (1858).

*Pholidia polyclada* F. Muell. in *Trans. phil. Soc. Vict.* 1: 47 (1855).

*Illust.*: Hill, *Aust. Plants* 1<sup>st</sup>: 7 (1962); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 39, col. (1963); *Agric. Gaz. N.S.W.* 19: 111 (1908)—habit; Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 16 (1886).

*Vern.*: Twiggy Emu-bush. *Distr.*: A (W. of Merbein)—also S.A., N.S.W., Qd, Cent. Aust.

—Leaves >5 cm. long, mostly >4 mm. wide; corolla creamy-white; stamens shortly exerted from tube; fruit ovoid, beaked, 15-20 mm. long (tall shrub or small tree, never divaricate; W. of Merbein):

*E. bignoniiflora* (Benth.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 294 (1858).

*Stenochilus bignoniæflorus* Benth. in *Mitch. J. Exped. trop. Aust.* 386 (1848).

*Illust.*: Crowley in Chippendale; *Poison Plants N. Terr.* Ext. Art. n. 2 pt. III: fig. 52 (1960); Vincent in Ewart, *Handb. For. Trees* t. 215 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 108 (1886); Mueller, *Plants indig. Colon. Vict.* t. 55 (1864-65); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 15 (1886); Myers in Turner, *Forage Plants Aust.* t. opp. 43 (1891).

*Vern.*: Bignonia Emu-bush (Quirramurrah—aborig.). *Distr.*: A—also W.A., S.A., N.S.W., Qd, N. Terr.

8. Plant silvery from an indumentum of minute appressed scales; leaves 7-15 mm. long, with hooked points, long-decurrent at base; calyx-lobes never imbricate; corolla-lobes <  $\frac{1}{4}$  the total length of blue scurfy corolla (erect broom-like shrub to 5 ft., localized in far N.W. Mallee):

*E. scoparia* (R. Br.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 296 (1858).

*Pholidia scoparia* R. Br. *Prodr. Flor. Nov. Holl.* 517 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 141, col. (1968); Hill, *Aust. Plants* 1<sup>st</sup>: 7 (1962); Graff in Mueller, *Myoporinous Plants Aust.* (Lithogr.) t. 40 (1886); Bauer in Endlicher, *Icon. Gen. Plant* t. 66 (1838).

*Vern.*: Silvery Emu-bush. *Distr.*: A (S. of Benetook)—also W.A., S.A., N.S.W.

—Plants glabrous, never silvery; leaves blunt or straight-pointed, not decurrent; calyx-lobes imbricate at base; corolla-lobes  $\pm \frac{1}{4}$  the length of corolla

9. Leaves linear-oblongate, 5-15 mm. long; branchlets sometimes spine-tipped; calyx-lobes usually only 4; corolla 12-14 mm. long, stellate-pubescent externally; drupe beaked, longer than calyx (divaricate bush of Murray Mallee, N.W. from Benjeroop):

*E. divaricata* (F. Muell.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 293 (1858).

*Pholidia divaricata* F. Muell. in *Trans. phil. Soc. Vict.* 1: 4)7 (1855).

*Illust.*: Graff in Mueller, *Myoporinus Plants Aust.* (Lithogr.) t. 55 (1886).

*Vern.*: Spreading Emu-bush. *Distr.*: AFG—also S.A., N.S.W.

—Leaves thick, *ovate to oblong*, <8 mm. long; branchlets *never* spiny; calyx-lobes 5; corolla <12 mm. long, *glabrous* externally; drupe *no longer* than calyx

10. Leaves  $\pm$  *decurved, flat or concave* above, *wrinkled* beneath, 4-8 mm. long, 3-6 mm. broad; drupe *ovoid, succulent* (occasional in Mallee, from S. fringe of Little Desert to far N.W.):

*E. crassifolia* (F. Muell.) F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 297 (1958).

*Pholidia crassifolia* F. Muell. in *Linnæa* 25: 430 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1117 (1957); Graff in Mueller, *Myoporinus Plants Aust.* (Lithogr.) t. 46 (1886).

*Vern.*: Thick-leaf Emu-bush. *Distr.*: ABC—also W.A., S.A.

—Leaves *erect* and appressed, *plano-convex, gibbous*, strongly *tuberculate* on lower face, somewhat resembling a coccid scale-insect, 2-5 mm. long, <2 mm. broad; drupe thin, flattened, *almost dry* (Little Desert, Wimmera & Wedderburn district):

*E. gibbifolia* (F. Muell.) F. Muell. in *Rep. Babbage Exped. S. Aust.* 18 (1859)—ut "*E. gibbosifolia*" in err.

*Duttonia gibbifolia* F. Muell. in *Trans. Vict. Inst.* 41 (1855).

*Illust.*: Ewart, White & Wood, *Proc. roy. Soc. Vict.* new ser. 23: t. 53 (1911), as *E. gibbosifolia*; Graff in Mueller, *Myoporinus Plants Aust.* (Lithogr.) t. 52 (1886), as *E. gibbosifolia*; Fitch in *Hooker's J. Bot.* 8: t. 1 (1856), as *Duttonia gibbifolia*.

*Vern.*: Coccid Emu-bush. *Distr.*: CH—also W.A., S.A.

[F. Mueller in his *Key Syst. Vict. Plants* 1: 401 (1888) had included *E. alternifolia* R. Br. which differs from *E. maculata* in its tuberculate branches, aromatic narrow-linear or even subterete leaves, rosy flowers, enclosed stamens and much shorter drupes (<10 mm. long). Although known from Overland Corner on the Murray River (S.A.), less than 40 miles from the Victorian border, the species has never been collected in this State.]

## Family PLANTAGINACEÆ

### PLANTAGO L. (1753)

1. Leaves with a  $\pm$  prominent midrib but *lateral veins inconspicuous* 6  
Leaves with 3 or more *equally prominent parallel veins* 2
2. Leaf-blade *ovate or broadly elliptic*, 1.5-4.0" wide, *abruptly narrowed at base* into a petiole usually *as long as blade*, *glabrous or nearly so*; flowers *glabrous*, in a dense spike 2-8" long; fruit with 8-16 seeds (widespread weed of moister open places, except in N.W.):



**\*P. major** L. *Spec. Plant.* 1: 112 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 25: t. 5 (1968); Butcher, *New ill. Brit. Flor.* 2: fig. 1160 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 4970 (1960); M. E. R. in Allan, *Bull. sci. industr. Res., N.Z.* 83: fig. 76 B (1940); Pilger, *Pflanzenreich* IV 269 (Heft. 102): 42 fig. 7 (1937); Muenscher, *Weeds* 430 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 246 fig. 3 (1915); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2290, col. (1927); Georgia, *Manual Weeds* fig. 272 (1914).

*Vern.*: Greater Plantain. *Distr.*: EJKNPRSTWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

—Leaf-blade mostly <1.5" wide, *gradually narrowed at base*, the petiole *much shorter*; fruit with <8 seeds (normally 2- to 6-seeded) 3

3. Scapes *angular*, deeply and *conspicuously furrowed*, glabrous or nearly so, much longer than leaves; flowers very congested in an *ovoid* or shortly cylindrical spike 1-7 cm. long; bracts *acuminate*, slightly longer than sepals; anthers linear-oblong (widely dispersed, almost ubiquitous weed):

**\*P. lanceolata** L. *Spec. Plant.* 1: 113 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1121 (1957); Ewart, *Flor. Vict.* fig. 330 (1931); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: fig. 88 (1949); M. E. R. in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 76 A (1940); Ross-Craig, *Drawings Brit. Plants* 25: t. 3 (1968); Butcher, *New ill. Brit. Flor.* 2: fig. 1162 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 4974 (1960); Muenscher, *Weeds* 430 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 246 fig. 5 (1915); Burbidge, *Flor. Aust. Cap. Terr.* fig. 338 (1970).

*Vern.*: Ribwort (Lamb's-tongue—N.S.W.). *Distr.*: ADEHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Scapes *not angular* (if sometimes slightly furrowed, then hairy); bracts *never acuminate*, often blunt, *no longer* than sepals; anthers broadly oblong to ovate-orbicular 4

4. Flowers pale green, glabrous or nearly so, small (<3 mm. long) and *distantly spaced* along a very *slender interrupted spike*; leaves *lax* and often membranous, oblanceolate, 2-10" long under optimum conditions (widespread in shaded forests, chiefly of E. highlands, also Lower Glenelg R.):

**P. debilis** R. Br. *Prodr. Flor. Nov. Holl.* 425 (1810).

*Vern.*: Shade Plantain. *Distr.*: DENPSTWZ—also Tas., N.S.W., Qd.

—Flowers *crowded on a stout spike* or, if ever  $\pm$  interrupted, then hairy and 3-4 mm. long; leaves firm-textured 5

5. Leaves linear to oblanceolate, 3-veined, sometimes distantly toothed; bracts and sepals *pubescent* or *hirsute* on the back; petals *acute*; flowers typically in long cylindrical spikes, but in very depauperate plants sometimes reduced to 2 or 3 (abundant throughout State):

*P. varia* R. Br. *Prodr. Flor. Nov. Holl.* 424 (1810).

*Illust.*: Curtis, *Student's Flor. Tasm.* 3: 561 (1967); Crowley in Chippendale, *Poison Plants N. Terr.* Ext. Art. n. 2 pt. III: fig. 54 (1960); Myers in Turner, *Forage Plants Aust.* t. opp. 45 (1891); White in Bailey, *Compr. Cat. Qd Plants* fig. 373 (1913).

*Vern.*: Variable Plantain. *Distr.*: ABCDEHJKMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Leaves elliptic-lanceolate to broadly oblanceolate, 3- to 5-veined, usually whitish-tomentose; bracts and sepals quite *glabrous* (or the former sometimes ciliate at apex); petals *obtuse* or almost so; flowers always crowded in dense spikes (montane to alpine grasslands E. & N.E. from Melbourne):

*P. antarctica* Dcne. in *DC. Prodr.* 13<sup>1</sup>: 703 (1852).

*Vern.*: Mountain Plantain. *Distr.*: RSVW—also Tas., N.S.W., A.C.T.

6. Corolla-tube *pubescent*; plant either with pinnatifid leaves or completely villous with long spreading hairs 11  
Corolla-tube *glabrous*; plant neither with pinnatifid foliage nor wholly villous 7
7. Flowers glabrous or almost so, *distant along a very slender interrupted spike*, small and green:

*P. debilis* R. Br. [See p. 604]

Flowers *never distant* or, if somewhat interrupted, then with hairy bracts and sepals 8

8. Backs of bracts and sepals  $\pm$  *hairy*, the keels of latter *narrow and prominent*; styles finally much exceeding corolla; leaves always hairy:

*P. varia* R. Br. [See above]

Backs of bracts and sepals glabrous (but margins occasionally ciliate), their keels *broad* and sometimes thickened 9

9. Flowers 1-4 in a *terminal head*, pale brownish, the scapes often shorter than the entire, *thickish glabrous leaves* (rare perennial with leaf-rosettes 1-3" diam., wet places on higher alps of Mt. Wellington and Bogong High Plains):

*P. muelleri* Pilger in Engler *Pflanzenreich IV* 269 (Heft 102): 118 (1937).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 98 (1886); Mueller, *Plants indig. Colon. Vict.* t. 66 (1864-65)—both as *P. stellaris*.

*Vern.*: Star Plantain. *Distr.*: SV—also Tas.

—Flowers several to numerous in *dense cylindrical spikes*, the sepals often with conspicuous *dark purple keels* 10

10. Leaves forming a *flat perennial rosette*, often *glabrescent*; bracts  $\pm$  1 mm. wide; petals <1 mm. long; style manifestly *longer* than corolla (damp exposed situations in alpine & subalpine tracts of Baw Baws, Mt. Hotham and Bogong High Plains):

**P. tasmanica** Hook. f. in Hook. *Lond. J. Bot.* 6: 276 (1847).

*Vern.*: Tasman Plantain. *Distr.*: SV—also Tas.

[The var. *daltonii* (Dcne., *ut sp.*) Hook. f. in *Flor. Tasm.* 1: 303 (1857) has relatively narrower, less hairy leaves with petioles at least half the length of blade; it has been assigned specific rank again in W. M. Curtis's *Student's Flor. Tasm.* 3: 563 (1967) and appears to be almost co-extensive with more typical *P. tasmanica* on Victorian mountains. The foliage is often quite glabrous.]

—Leaves  $\pm$  *erect*, always *hairy*; bracts  $\pm$  2 mm. wide, *blackish-purple* with pale translucent margins (as also in sepals); petals 1.5-2 mm. long; style *not* or hardly exceeding corolla (annual, widespread through Mallee from Swan Hill into far N.W.):

**P. pritzelii** Pilger in *Repert. Spec. nov. Regn. veg.* 20: 12 (1924).

*Illust.*: Pilger, *Pflanzenreich* IV 269 (Heft 102): 263 fig. 27 (1937).

*Vern.*: Dark Plantain. *Distr.*: ABFG—also W.A., S.A., N.S.W.

11. Leaves in a rosette, *spreading widely*, mostly *pinnatifid*, sometimes acutely toothed; scapes often much longer than foliage; spikes *narrowly cylindrical*, 2-12 cm. long, with very short appressed hairs; bracts as long as the *unequal* sepals (2 ciliate on margins, 2 ciliate on prominently winged keel); capsule 3- to 4-locular (abundant throughout lowlands, often on subsaline ground):

\***P. coronopus** L. *Spec. Plant.* 1: 115 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 108, col. (1965); Ross-Craig, *Drawings Brit. Plants* 25: t. 1 (1968); Butcher, *New ill. Brit. Flor.* 2: fig. 1164 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 4969 (1960); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: fig. 87 (1949); Pilger, *Pflanzenreich* IV 269 (Heft 102): 129 fig. 18 (1937); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2293, col. (1927); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 106 (1915); Coste, *Flor. Franc.* 3: fig. 2995 (1906).

*Vern.*: Buck's-horn Plantain. *Distr.*: CDEJKMNPRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Leaves *erect*, *entire* (or very obscurely toothed); scapes hardly exceeding foliage; *ovoid or oblong*, mostly <2 cm. long, villous with *long spreading hairs*; bracts exceeding the 4 *equal wingless* hairy sepals; capsule 2-locular (small annual of central W. districts, from Maryborough to Grampians & Goroke):

\***P. bellardii** All. *Flor. Ped.* 1: 82, t. 85 fig. 3 (1785).

*Illust.*: Pilger, *Pflanzenreich* IV 269 (Heft 102): 413 fig. 41 (1937); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 9: fig. 2292, col. (1927); Coste, *Flor. Franc.* 3: fig. 3004 (1906); Reichenbach, *Icon. Flor. germ.* 17: t. 1133 fig. I-III, col. (1855).

*Vern.*: Hairy Plantain. *Distr.*: CHJ—also S.A.

[Transitory occurrences of the Asiatic *P. indica* L. and N. American *P. aristata* Michx. have been noted at Tatura (July 1931) and Lilydale (Feb. 1923) respectively. Both are sparsely hairy annuals with narrow-linear leaves. The latter has long simple scapes arising from the base, short ( $\pm$  3 cm. long) silky inflorescences and erect terete bracts 3-4 times as long as flowers, while the former has leafy stems, rather short axillary scapes, subglobular inflorescences and chaffy bracts with very wide hyaline margins; but neither seems to have persisted at its place of introduction. Ewart, *Flor. Vict.* 1038 (1931) has recorded *P. aristata* under the name *P. patagonica* Jacq., of which *P. aristata* was at one time considered a variety.]

### Family RUBIACEÆ

1. Flowers (and fruits) remaining quite *distinct* 4  
Flowers in small *heads or partly fused clusters*, forming compound fruits from the several united ovaries 2
2. Compound fruit *fleshy*, reddish, 7-15 mm. diam.; leaves ovate to oblong-lanceolate, 1-3" long; stipules *deciduous*; peduncles slender, paired at ends of branches (tall glabrous shrub or woody climber of jungles in far E. Gippssland) *Morinda* (p. 612)  
Compound fruit *dry, capsular*, <9 mm. diam.; leaves mostly <1.5" long; stipules united in a *persistent sheath* (herbs and small semi-shrubs) 3
3. Flower-heads  $\pm$  *sessile*, clustered into a single, *axillary, globular compound head*, the inner ovarian walls of syncarpium forming a *deciduous operculum* (widely ranging, often diffuse and malodorous herbs) *Opercularia* (p. 608)  
Flower-heads *simple*, 5-11 on *slender peduncles* (to 1 cm. long) forming a *terminal umbel*, each head of 2-3 flowers with a common reddish *campanulate involucre* (small perennial, stiffly hairy herb of E., N.E. and Brisbane Ranges): *Pomax* (p. 609)
4. Leaves *subsessile, whorled* (except in *Asperula gemella*); stipules *leaf-like* and part of the whorl; stamens *not* exceeding the corolla; stigmas *capitate*; fruit *dry* 6  
Leaves *petiolate, opposite*; stipules *small,  $\pm$  fused in a sheath*; stamens sometimes *long-exserted*; stigmas *long-filiform*, often far exserted; fruit *succulent* 5
5. Plants usually *shrubby*; flowers *unisexual* (except in *C. moorei*); calyx 4- to 5-lobed (at least in female flowers); drupe red, yellowish or blue *Coprosma* (p. 610)  
Plants *herbaceous*, forming mats; flowers *bisexual*, or some male and female by abortion; calyx 2-lobed or obsolete; drupe red or greenish *Nertera* (p. 609)
6. Corolla-tube *none* or extremely short; calyx absent; habit sometimes trailing *Galium* (p. 615)  
Corolla-tube *distinct* (at least in male flowers), funnel-shaped; habit not trailing (except in *Asperula gemella*) 7
7. Calyx *rudimentary*; corolla *white or creamy*; flowers in *cymes*, not heads, often unisexual *Asperula* (p. 613)

Calyx *conspicuous*, 6-toothed; corolla *lilac*; flowers bisexual, in terminal *involucrate heads* (weak annual weed of cultivation)

\**Sherardia* (p. 612)

### OPERCULARIA J. Gärtn. (1788)

1. Flower-heads on *slender erect peduncles* 1-4 cm. long (longer in fruit); seeds  $\pm$  1 mm. long, transversely rugose but *not* ribbed; leaves linear to narrowly oblanceolate,  $\pm$  scabrid (N.W., farther W. & S.W., with isolated occurrences in Ben Major Forest and Brisbane Ranges):

*O. scabrida* Schlechtendal in *Linnaea* 20: 604 (1847).

*Vern.*: Stalked Stinkweed. *Distr.*: BCDEJN—also W.A., S.A., N.S.W.

—Flower-heads subsessile *or* on very short *recurving peduncles*; seeds 1.5-3.5 mm. long 2

2. Plant *coarsely hirsute*; leaves ovate to broadly lanceolate; stamens normally only 1 or 2; seeds *without ribs* on the ventral face (on and E. from Wilsons Promontory, usually in rocky places):

*O. hispida* Spreng. *Syst. Veg.* 1: 385 (1824).

*Illust.*: Burbidge, *Flor. Aust. Cap. Terr.* fig. 341 (1970).

*Vern.*: Hairy Stinkweed. *Distr.*: RTWZ—also N.S.W., A.C.T.

—Plant shortly scabrid-pubescent *or* almost glabrous; stamens normally 3-5; seeds *prominently 2-ribbed* on ventral face 3

3. Leaves subsessile, mostly <3 mm. wide, usually *linear to oblong*, the lateral veins quite *obscure* on under-side; stems to 1 ft. long; seeds *delicately wrinkled* 5

Leaves mostly >3 mm. wide (usually 4-8 mm.), the lateral veins *conspicuous* on under-side where  $\pm$  raised; seeds either coarsely wrinkled *or* smooth 4

4. Stems 1-3 ft. long,  $\pm$  *scabrid*; leaves mostly >2 cm. long, very shortly petiolate to *subsessile, dull*; calyx-segments linear-lanceolate, beset with many short bristly hairs; seeds *ellipsoid, coarsely cristate-rugulose* (far W. and far E. only):

*O. aspera* J. Gärtn. *Fruct. & Semin. Plant.* 1: 112, t. 24 fig. 4 (1788).

*Illust.*: Gaertner (*l.c.*); Baillon, *Hist. Plant.* 7: fig. 242-245 (1880)—fruit.

*Vern.*: Coarse Stinkweed. *Distr.*: CDEWZ—also N.S.W., Qd.

—Stems <1 ft. long, *smooth*; leaves <2 cm. long, abruptly contracting into *distinct petioles* 2-4 mm. long, light green, usually  $\pm$  *glossy*; calyx-segments lanceolate, with a few scattered bristles; seeds *ovoid, smooth* on dorsal face (widespread in southern districts, from Lower Glenelg R. to Cape Howe):

*O. ovata* Hook. f. in Hook. *Lond. J. Bot.* 6: 465 (bis) (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 38, col. (1856).

*Vern.*: Broad-leaf Stinkweed. *Distr.*: DEJNPSTZ—also S.A., Tas., N.S.W.

5. Branches *lax*,  $\pm$  *angular*, mostly <1 mm. diam.; leaves *linear to oblong-lanceolate*; flowers *bisexual* (very widespread herb, variable in foliage):

*O. varia* Hook. f. in Hook. *Lond. J. Bot.* 6: 466 (bis) (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1122 J-K (1957); Curtis, *Student's Flor. Tasm.* 2: 271 (1963).

*Vern.*: Variable Stinkweed. *Distr.*: ACDEHJKMNPSTVWZ—also S.A., Tas., N.S.W., Qd.

—Branches *rigid, erect*, shiny, *terete*, 1-2 mm. diam.; leaves *narrow-linear*; flowers *unisexual* (almost shrubby plant of Mallee sand-hills, from Little Desert to far N.W.):

*O. turpis* F. Muell. ex Miq. in *Ned. kruidk. Arch.* 4: 109 (1856).

*Vern.*: Twiggy Stinkweed. *Distr.*: AC—also S.A.

#### POMAX Soland. ex DC. (1830)

*P. umbellata* (J. Gært.) Soland. ex Miq. in *Ned. kruidk. Arch.* 4: 111 (1856).

*Opercularia umbellata* J. Gært. *Fruct. & Semin. Plant.* 1: 112, t. 24 (1788).

*Illust.*: Gaertner (*l.c.*), as *Opercularia umbellata*; Black, *Flor. S. Aust.* ed. 2: fig. 1122 L-Q (1957); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 119 (1906); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 150 (1901); Baillon, *Hist. Plant.* 7: fig. 240 & 241 (1880)—flowers; Burbidge, *Flor. Aust. Cap. Terr.* fig. 340 (1970).

*Vern.*: Pomax. *Distr.*: NRSVWZ—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust.

#### NERTERA Banks & Soland. ex J. Gært. (1788)

Plant *hirsute*; leaves *ovate, pointed*, 4-10 mm. long; calyx-limb *2-lobed*; corolla 3-8 mm. long, with *slender tube*; staminal filaments and styles *long-exserted* (3-15 mm. beyond corolla-limb); anthers *linear*, 1-3 mm. long (widely dispersed in moist shaded southern habitats, from Lower Glenelg R. to far E. Gippsland):

*N. reptans* (F. Muell.) Benth. *Flor. aust.* 3: 431 (1867).

*Diodia reptans* F. Muell. in *Trans. Vict. Inst.* 128 (1855).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 255, col. (1968).

*Vern.*: Dwarf Nertera. *Distr.*: EKSXWZ—also S.A., N.S.W.

Plant *glabrous*; leaves mostly *orbicular, blunt*, pale green, 3-6 mm. long; calyx-limb *truncate*; corolla 1-2 mm. long, with very short tube; filaments

and styles not or only *slightly exerted*; anthers *broadly oblong*,  $\pm 0.5$  mm. long (restricted to alpine & subalpine bogs, from Lake Mountain E. & N.E. to Bogong High Plains):

*N. depressa* Banks & Soland. ex J. Gärtner. *Fruct. & Semin. Plant.* 1: 124, t. 26 (1788).

*Illust.*: Gaertner (*l.c.*); Salmon, N.Z. *Flowers & Plants in Colour* revised ed.: t. 334, col. (1967); Fitch in *Curtis's bot. Mag.* 95: t. 5799, col. (1869); *Garden* 19: 445 (1881), also *Gartenflora* 30: 348 (1881).

*Vern.*: Matted *Nertera*. *Distr.*: RSV—also Tas., N.S.W., N.Z.

[G. H. M. Lawrence in *Gentes Herb.* 8: 69 (1949) synonymized *N. depressa* under *N. granadensis* (Mutis in L. f.) Druce—a very similar species in the S. American Andes. In this he has been followed by Beadle, Evans & Carolin, *Handb. vasc. Plants Sydney District* 356 (1962). However, in H. H. Allan's *Flor. N.Z.* 1: 589 (1961) and in W. M. Curtis's *Student's Flor. Tasm.* 2: 270 (1963), the name *N. depressa* is retained for Australasian populations. This latter course seems desirable, pending a critical monographic study of the whole genus.]

#### COPROSMA Forst. & Forst. f. (1776)

1. Plants *alpine, prostrate*, matted or trailing; leaves thickish, <1 cm. long, 1-nerved (*not* reticulate on under-side); flowers solitary, terminating short branchlets 6  
Plants *erect and woody*, >3 ft. high; leaves >1 cm. long, often reticulate-veined 2
2. Leaves <8 mm. wide (mostly <5 mm.); branchlets often *spiny*; flowers *solitary in axils*; fruit *bright red*,  $\pm 5$  mm. long 5  
Leaves >10 mm. wide (mostly >15 mm.); branchlets *never spiny*; flowers 3 to many in *axillary clusters*, sometimes on branched peduncles; fruit orange-red, amber or yellow, 6-10 mm. long 3
3. Leaf-blade seldom attaining 2", *scabrid*, broadly elliptic to almost orbicular, with *acuminate* apical point; stipules *ciliate-denticulate* ovate, long-pointed; corolla-lobes *longer* than tube (shrub 3-6 ft., widespread in moister forests of E. & W. highlands, also Lower Glenelg R.):

*C. hirtella* Labill. *Nov. Holl. Plant. Specim.* 1: 70, t. 95 (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 395, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 149 (1967); Meredith, *Bush Friends Tasm.* last ser.: t. 3, col. (1891); Burbidge, *Flor. Aust. Cap. Terr.* fig. 339 (1970).

*Vern.*: Rough *Coprosma*. *Distr.*: DEJKNPRSVWZ—also Tas., N.S.W., A.C.T.

—Leaf-blade usually 2-4" long, *smooth*, glabrous, ovate- to elliptic-oblong; stipules *never* ciliate, triangular; corolla-lobes *shorter* than tube (tall shrubs or small trees, escaped from cultivation in near-coastal tracts)

4. Leaves *very lustrous* above, almost fleshy, bearing prominent *domatiate* pits on under-side, the apex rounded, truncate or retuse, the margins *recurved*; fruit  $\pm$  *globular*, 6-8 mm. wide (Port Phillip & Tower Hill):

\**C. repens* A. Rich. in *Voy. Astrolabe (Bot.)* 1: 264 (1832).

*Illust.*: Poole & Adams, *Trees & Shrubs N.Z.* 175 (1963); Taylor, *Tuatara* 9: 37 (1961); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: tt. 15-17, col. (1967); Kirk in Matthews, *N.Z. Trees* ed. 2: t. opp. 17 (1953), as *C. retusa*; Cockayne & Turner, *Trees N.Z.* 39 (1928), as *C. retusa*.

*Vern.*: Taupata—Maori name (Looking-glass Bush). *Distr.*: ENP—also N.Z.

—Leaves *not* or only slightly glossy above,  $\pm$  leathery, *without* domatiate pits, the apex *acute* and margins *flat* or nearly so; fruit *ovoid-oblong*, 4-5 mm. wide (localized in Shoreham to Red Hill district, Mornington Peninsula):

\**C. robusta* Raoul in *Ann. Sci. nat. sér.* 3, 2: 121 (1844).

*Illust.*: Poole & Adams, *Trees & Shrubs N.Z.* 174 (1963); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 78, col. (1967); Wild & Zotov, *Trans. N.Z. Inst.* 60: 552 (1930); Cockayne & Turner, *Trees N.Z.* 40 (1928).

*Vern.*: Karamu—Maori name. *Distr.*: P—also N.Z. (indigenous).

5. Lamina of leaves *thin-textured*, *dull*, with reticulate veins *conspicuous* on under-side (widespread through fern-gullies and forests of E. & W. highlands):

*C. quadrifida* (Labill.) Robinson in *Proc. amer. Acad. Arts Sci.* 45: 409 (1910).

*Canthium quadrifidum* Labill. *Nov. Holl. Plant. Specim.* 1: 69, t. 94 (1805);

*Coprosma billardieri* Hook. f. in Hook. *Lond. J. Bot.* 6: 465 (bis) (1847).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 458, col. (1968); King & Burns, *Wildflowers Tasm.* 45, col. (1969); Gordon in Ewart, *Handb. For. Trees* t. 220 (1925), as *C. billardieri*.

*Vern.*: Prickly Currant-bush. *Distr.*: DEJKNPSTVWZ—also Tas., N.S.W., A.C.T.

[An interesting local population having *much larger leaves*—to a maximum of 50 × 13 mm.—was discovered at South Bullarto, near the head of Werribee R., in Aug. 1937.]

—Lamina of leaves *thick*, *lustrous*, with venation on under-side *quite obscure* (scattered in montane to subalpine forest-land of E., between upper Yarra R. and Limestone Ck. near N.S.W. border):

*C. nitida* Hook. f. in Hook. *Lond. J. Bot.* 6: 465 (bis) (1847).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 430, col. (1968); Curtis's *bot. Mag.* 166: new ser. t. 88, col. (1949); Fitch in Hooker f., *Flor. Tasm.* 1: t. 39, col. (1856); Meredith, *Bush Friends Tasm.* last ser.: t. 9, col. (1891).

*Vern.*: Shining Coprosma. *Distr.*: NRSVW—also Tas.



6. Stems *filiform*, <1 mm. thick, rooting freely amongst sphagnum moss; leaves 3-5 mm. long, ovate-lanceolate, *sharply acute*; stipular sheath *entire*; flowers *bisexual*; fruit *blue*, 4-6 mm. diam. (localized at Lake Mountain & Baw Baw Plateau):

*C. moorei* F. Muell. ex L. Rodway in *Pap. Proc. roy. Soc. Tasm.* 1893: 179, t: 1 opp. 184 (1894).

*Illust.*: Rodway (*l.c.*); Rodway, *Tasm. Flor.* t. opp. 72 (1903).

*Vern.*: Turquoise Coprosma. *Distr.*: S—also Tas.

—Stems 1-3 mm. thick, leaves 5-10 mm. long, acute or obtuse; stipular sheath  $\pm$  *ciliate*; flowers *unisexual*; fruit *reddish or orange* 7

7. Leaves broadly *ovate-elliptic*; stems *rooting freely*; style-branches 4; fruit 5-8 mm. diam. (Baw Baws, Mt. Lovick & The Bluff):

*C. pumila* Hook. f. *Flor. antarct.* 2: 543 (1847).

*C. repens* Hook. f. *l.c.* 1: 22, t. 16b (1844), *non* A. Rich. (1832).

*Illust.*: Hooker f. (*l.c.*); Poole & Adams, *Trees & Shrubs N.Z.* 185 (1963); Salmon, *Field Guide Alpine Plants N.Z.* t. 378, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 517, col. (1967); Laird in Taylor, *Rep. Aust. Antarct. Res. Exped.* ser. B, 2 (Bot.): 135 (1955), as *C. repens*; Everard, *Wild Flowers World* t. 2 fig. 1, col. (1970).

*Vern.*: Creeping Coprosma. *Distr.*: S—also Tas., N.S.W., N.Z.

—Leaves *linear-oblong*; stems *not or hardly rooting*; style-branches 2 (scattered in rocky places from Howitt High Plains to Bogongs, Nunniong Plateau & Cobberas):

*C. nivalis* W. R. B. Oliver in *Bull. Bishop Mus. (Honolulu)* 132: 37 (1935).

*Vern.*: Snow Coprosma. *Distr.*: SVW—also ?N.S.W.

[Oliver, *l.c.* 49 (1935), described also *C. tadgellii* from a barren fragment collected at Mt. Hotham in Dec. 1917, distinguishing it from *C. nivalis* by the *pubescent* branchlets. Since both *C. nivalis* and *C. nitida* (with hairy branchlets) occur in the vicinity, it seems probable that *C. tadgellii* was a rare natural hybrid between these two species.]

### MORINDA L. (1753)

*M. jasminoides* A. Cunn ex Hook. in *Curtis's bot. Mag.* 61: t. 3351, col. (1834).

*Illust.*: Hooker (*l.c.*); Schnizlein, *Icon. Fam. nat. Regn. veg.* 2: t. 127 b fig. 24 (1854)—flower.

*Vern.*: Jasmin Morinda. *Distr.*: WZ—also N.S.W., Qd.

### \*SHERARDIA L. (1753)

\**S. arvensis* L. *Spec. Plant.* 1: 102 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1124 (1957); Ross-Craig, *Drawings Brit. Plants* 14: t. 26 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1189 (1961); Adams,

*Ill. Flor. Pacific States* 4: fig. 4988 (1960); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1326, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 247 fig. 1, col. (1915); Perrin, *Brit. flowering Plants* 4: t. 266, col. (1914); Burbidge, *Flor. Aust. Cap. Terr.* fig. 344 (1970).

*Vern.*: Field Madder. *Distr.*: EHJKMNPRTWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

### ASPERULA L. (1753)

1. Leaves in pairs, narrow-linear, 5-30 mm. long, the margins  $\pm$  recurved; cymes few-flowered, usually longer than leaves; corolla 1-2 mm. long (glabrous weak plant, with long climbing stems, very rare and known only from Avoca R. but perhaps present along Murray R. in far N.W.):

*A. gemella* Shaw & Turrill in *Kew Bull.* 1928: 102 (1928).

*Illust.*: Schumann in Engler & Prantl, *Natürl. PflFam.* IV 4: 150 fig. 48 D (1897), as *Galium geminifolium*; Mueller, *Key Syst. Vict. Plants* 2: fig. 75 (1886), as *A. geminifolia*; Mueller, *Plants indig. Colon. Vict.* t. 31 (1864-65), as *G. geminifolium*.

*Vern.*: Twin-leaf Bedstraw. *Distr.*: J—also S.A., N.S.W.

- Leaves whorled; plants not or hardly climbing 2
- 2. Whorls of 4 leaves (quite glabrous) 8
- Whorls of 6 leaves or more 3
- 3. Upper surfaces of leaves minutely pubescent or scabrous 6
- Upper surfaces of leaves glabrous, but the margins and midribs (beneath) often  $\pm$  scabrid-ciliate 4
- 4. Leaves entirely glabrous, drying dark brown to black, obovate-oblong to oblanceolate, seldom linear (alps & subalps of E. & N.E. highlands):

*A. gunnii* Hook. f. in Hook. *Lond. J. Bot.* 6: 463 (bis) (1847).

*Vern.*: Mountain Woodruff. *Distr.*: KNRSVWZ—also Tas., N.S.W., A.C.T.

- Leaves mostly scabrid-ciliate on margins and under-sides, drying green or grey-green (never blackening), linear to narrow-linear 5
- 5. Stems thickly scabrid-pubescent; leaves terminating in a pungent hyaline point (widespread except in Mallee, often in stony places):

*A. scoparia* Hook. f. in Hook. *Lond. J. Bot.* 6: 463 (bis) (1847).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 419, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1122 G-I (1957); Fitch in Hooker f., *Flor. Tasm.* 1: t. 40 fig. sup., col. (1856).

*Vern.*: Prickly Woodruff. *Distr.*: DEHJMNPRSVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

- Stems glabrous or sparsely scabrid; leaves acute to shortly acuminate, but not pungent-pointed (frequent throughout State, and variable):

**A. conferta** Hook. f. in Hook. *Lond. J. Bot.* 6: 464 (bis) (1847).

*A. wimmerana* Shaw & Turrill in *Kew Bull.* 1928: 94 (1928).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 109, col. (1965); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 121 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 342 (1970).

*Vern.*: Common Woodruff. *Distr.*: ABCDEGHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[Two old barren collections (in Melbourne Herbarium) from Little River & Smythe's Ck in the W. region have strap-shaped leaves to 16 mm. long and, in appearance, closely approach *A. charophyton* Shaw & Turrill (*l.c.* 101). They have shorter internodes than in the latter species and, until flowering material is available, must be left under *A. conferta*.

*A. wimmerana* (*l.c.*) is a population of more arid terrain in the Wimmera and N.W. Mallee, distinguished by its *suberect foliage* (at least in the dried state) with  $\pm$  *incurved apices*. As there seem to be no other significant differences from usual forms of *A. conferta*, it is treated here as an ecotype of that species.]

6. Plant *slender, ascending*, with internodes at least 1 cm. long (often more); leaves obovate to oblanceolate, 5-12 mm. long, remaining *pale green* (forests of E. highlands, where frequent):

**A. euryphylla** Shaw & Turrill in *Kew Bull.* 1928: 100 (1928).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1123 (1957)—var. *tetraphylla*; Black, *Trans. roy. Soc. S. Aust.* 62: t. 20 fig. 3 (1938)—var. *tetraphylla*.

*Vern.*: Broad-leaf Woodruff. *Distr.*: NRSTV—also S.A. (var.), ?N.S.W.

[The var. *octophylla* Shaw & Turrill (*l.c.*) differs in having relatively narrower (1-2 mm.) leaves in whorls of 8, and has been recorded for Victoria, but without locality details.]

—Plants *small and dense*, with internodes much <1 cm.; leaves linear-oblong to narrowly oblanceolate, mostly <5 mm. long 7

7. Stems *scaberulous*; leaves *blackening* when dry, often lustrous, their apices *obtuse or broadly acute* (alps & sub-alps of E. & N.E. highlands):

**A. pusilla** Hook. f. in Hook. *Lond. J. Bot.* 6: 464 (bis) (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 40 fig. inf., col. (1856).

*Vern.*: Alpine Woodruff. *Distr.*: SVZ—also Tas., N.S.W., A.C.T.

—Stems *glabrous*; leaves *hardly darkening* when dry, dull, their apices *acute to acuminate* (rare moss-like plant of Grampians):

**A. minima** Hook. f. in Hook. *Lond. J. Bot.* 6: 464 (bis) (1847).

*Vern.*: Mossy Woodruff. *Distr.*: D—also Tas.

8. Plant almost *shrubby*, with *rigid* woody  $\pm$  *erect* stems; leaves *erect, unequal* (2 long & 2 short in each whorl), *linear-subulate* (rare, at Bete Bolong on Snowy R.):

**A. ambleia** Shaw & Turrill in *Kew Bull.* 1928: 99 (1928).

*Vern.*: Stiff Woodruff. *Distr.*: W—also N.S.W., A.C.T., Qd.

—Plant *herbaceous, lax*; leaves *equal, flattened* 9

9. Leaves *linear*, pointed, 3-8 mm. long, remaining *green* (rare, very slender weak herb of wet places in central areas and far S.W.):

*A. subsimplex* Hook. f. in Hook. *Lond. J. Bot.* 6: 463 (bis) (1847).

*Vern.*: Water Woodruff. *Distr.*: DENS—also Tas.

—Leaves mostly *obovate-oblong*, drying *black* (alpine & subalpine):

*A. gunnii* Hook. f. [See p. 613]

[The Mediterranean annual *A. arvensis* L. appeared in a garden at Redan, Ballarat, in Sept. 1916, but never became naturalized. It is distinctive in having long linear leaves (6-9 per whorl) and blue flowers in terminal heads with long-ciliate involucre bracts.]

### GALIUM L. (1753)

1. Fruits *linear oblong, deflexed*, the straight narrow mericarps connivent throughout, bearing comparatively long, white, rigid, *hooked hairs* (especially toward apex); leaves 4-6 in the whorl, 5 mm. long or less, obovate-spathulate, almost glabrous or  $\pm$  sprinkled with short stout hairs; flowers in *pairs* (widespread low weak annual with filiform stems):

\**G. murale* (L.) All. *Flor. Ped.* 1: 8, t. 77 fig. 1 (1785).

*Sherardia muralis* L. *Spec. Plant.* 1: 103 (1753).

*Illust.*: Allioni (l.c.); Abrams, *Ill. Flor. Pacific States* 4: fig. 4991 (1960); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1313, col. (1921); Coste, *Flor. Franc.* 2: fig. 1680 (1903); Reichenbach, *Icon. Flor. germ.* 17: t. 1192 fig. I, col. (1855).

*Vern.*: Small Goosegrass. *Distr.*: BCDEHJMNPRVW—also W.A., S.A., Tas., N.S.W., A.C.T.

—Fruits *reniform*, each of the two mericarps  $\pm$  globular, ovoid or allantoid and diverging; flowers in *axillary cymes* 2

2. Leaves 4 in each whorl (perennials) 6

Leaves  $>4$  to each whorl; stems sharply 4-angled, the angles roughened with retrorse prickles (annuals with weak decumbent or ascending stems) 3

3. Flowers in axillary 3-flowered cymes *shorter* than the subtending leaves; fruits 2-3 mm. long, on strongly *recurved* stalks, minutely granular-tuberculate, but *not* bristly; leaves 6-8 per whorl,  $>15$  mm. long, glabrous above but with retrorse prickles on margins (occasional weed in W. & N.W. at Lara, Kyneton, Kaniva and Sunraysia district):

\**G. tricornutum* J. E. Dandy in *Watsonia* 4: 47 (1957).

*G. tricorne* Stokes in With. *Bot. Arrang. Brit. Plants* ed. 2, 1: 153 (1787)—*nom. illegit.*

*Illust.*: Ross-Craig, *Drawings Brit. Plants 14*: t. 23 (1960); Abrams, *Ill. Flor. Pacific States 4*: fig. 4997 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 1125 (1957); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 480 (1931); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 122 k-n (1915); Britton & Browne, *Ill. Flor. N. States & Canada* ed. 2, 3: 259 (1913); Coste, *Flor. Franc.* 2: fig. 1674 (1903); Reichenbach, *Icon. Flor. germ.* 17: t. 1198 fig. 3, col. (1855)—all, except first two, as *G. tricornis*.  
*Vern.*: Rough Corn Bedstraw. *Distr.*: ACNP—also S.A., N.S.W.

—Flowers long-stalked and solitary or in axillary cymes *exceeding the leaves*; fruits on *straight* stalks,  $\pm$  muriculate or with long hooked bristles 4

4. Branches numerous, *capillary*; leaves at length *reflexing*, linear, <10 mm. long, 5-7 per whorl; fruits minute, <1 mm. long, muriculate, minutely granular or  $\pm$  glabrous (scattered in W., N. & N.E., also on Phillip Id.):

*G. parisiense* L. *Spec. Plant.* 1: 108 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants 14*: t. 21 (1960); Abrams, *Ill. Flor. Pacific States 4*: fig. 4994 (1960); Javorka & Csapody, *Icon. Flor. Hungar.* 484 (1933); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 123 g-i (1915); Britton & Browne, *Ill. Flor. N. States & Canada* ed. 2, 3: 258 (1913); Coste, *Flor. Franc.* 2: fig. 1678 (1903); Reichenbach, *Icon. Flor. germ.* 17: t. 1196 fig. IV, col. (1855).  
*Vern.*: Slender Bedstraw. *Distr.*: CDJMPRS—also S.A., W.A., N.Z.

[Australian material is apparently all referable to the var. *australe* Ewart & J. White in *Proc. roy. Soc. Vict.* new ser. 21: 541 (1909), differing from the typical Eurasian form in its darker, slightly smaller fruits which tend to aggregate in *small terminal clusters*. The Mediterranean *G. divaricatum* Lam. is very similar, but more diffuse; it is naturalized in S.A., N.S.W. & the A.C.T. and may be present also in Victoria.]

—Branches *not* capillary; leaves typically >10 mm. long; fruits bristly, >1 mm. long 5

5. Lower stems rather *stout*, >2 mm. wide; leaves 6-8 per whorl, oblanceolate to linear, *bristly above* and on the margins (widespread annual weed of cooler districts, scrambling and climbing by *recurved bristles* on the 4-angled stems):

\**G. aparine* L. *Spec. Plant.* 1: 108 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants 14*: t. 22 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1203 (1961); Abrams, *Ill. Flor. Pacific States 4*: fig. 4996 (1960); Fitch, *Ill. Brit. Flor.* ed. 5: fig. 479 (1931); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 249 fig. 1 (1915), *ibid.* 7: fig. 1111 (1931); Coste, *Flor. Franc.* 2: fig. 1673 (1903); Reichenbach, *Icon. Flor. germ.* 17: t. 1197 fig. I, col. (1855).  
*Vern.*: Cleavers (Goosegrass). *Distr.*: DEHKMNPRSTVW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd (var. *minor* Benth.), N.Z.

—Lower stems *slender*, <2 mm. wide; leaves 5-6 per whorl (usually 5), oblanceolate to spatulate, *glabrous* except for the ciliate mid-vein and margins (delicate weed scattered in W., S.W. & N.W.):

\**G. tenerum* Schleich. *Cat. Plant. Helv.* ed. 4: 18 (1821).

*Illustr.*: Sturm, *Dtsch. Flor.* ed. 2, 12: 211 (1904); Reichenbach, *Icon. Flor. germ.* 17: t. 1197 fig. IV, col. (1855), as *G. Aparine* var. *tenerum*.

*Vern.*: Bedstraw. *Distr.*: ACDHK—also S.A.

6. Fruitlets  $\pm$  *allantoid* (sausage-shaped), longitudinally furrowed, papillose but neither muriculate *nor* bristly; leaves thin, petiolate, oblanceolate to obovate, usually  $\pm$  4 mm. broad (sometimes broader), with reticulate venation and ciliate-scabrid recurved margins; flowers very few, shortly stalked, clustered in axils (scattered through E. Gippsland, from Nowa Nowa to Upper Genoa R.):

*G. liratum* N. A. Wakefield in *Vict. Nat.* 72: 70 fig. 2 (1955).

*Illustr.*: Wakefield (*l.c.*).

*Vern.*: Bedstraw. *Distr.*: WZ—also N.S.W.

—Fruitlets neither *allantoid* *nor* furrowed longitudinally; if leaves ever broad and petiolate, then fruits either bristly, muriculate *or* on long slender pedicels 7

7. Whorls with pairs of leaves *very unequal* (length ratio 2:1 or greater); leaves slightly scabrid, broad-linear, oblong or elliptic, often reflexed; stems prostrate, slender; peduncles and pedicels long and very slender, far exceeding the leaves; flowers white; fruits glabrous (scattered in sandy parts of E. Gippsland, from mouth of Snowy R. to Mallacoota):

*G. binifolium* N. A. Wakefield in *Vict. Nat.* 72: 69, 70 fig. 1 (1955).

*Illustr.*: Wakefield (*l.c.*).

*Vern.*: Bedstraw. *Distr.*: Z—also N.S.W.

—Whorls with pairs of leaves *equal* *or* *subequal* (inflorescence, leaf-shape and vestiture all variable) 8

8. Mature fruit armed with copious *long brown bristles* which are *hooked* at the apex (chiefly near the sea-coast, where scattered from Lower Glenelg R. to Sperm Whale Head):

*G. australe* DC. *Prodr.* 4: 608 (1830).

*Illustr.*: Wakefield, *Vict. Nat.* 72: 70 fig. 5 (1955); Curtis, *Student's Flor. Tasm.* 2: 273 (1963).

*Vern.*: Tangled Bedstraw. *Distr.*: DEJKMNPSTW—also W.A., S.A., Tas., N.S.W., Qd.

—Mature fruit glabrous, muricate or invested with curved whitish outgrowths, but *never* with true uncinat bristles (widespread almost throughout State) 9

9. Stems arising from a *single stout rootstock* (sometimes with a few fibrous roots at the lower nodes); leaves usually *narrow and ericoid* *or*, if otherwise, the fruits glabrous and peduncles usually shorter than leaves (inflorescence typically very short, scarcely exceeding the leaves, but in far eastern subalpine situations often with diffuse elongated dichotomous cymes; petals often yellowish):

*G. gaudichaudii* DC. *Prodr.* 4: 607 (1830).

*Illustr.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 215, col. (1968); Wakefield, *Vict. Nat.* 72: 70 fig. 4 (1955); Burbidge, *Flor. Aust. Cap. Terr.* fig. 343 (1970).

*Vern.*: Rough Bedstraw. *Distr.*: BCDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Stems arising from an *extensively creeping*, branched underground *rhizomic system*; leaves *broadish*; fruits glabrous and on rather elongated inflorescences in the highlands, *but* lowland plants less pubescent and with oblong leaves and slightly muricate fruits (never combining narrow ericoid foliage with glabrous shortly-stalked fruits):

*G. propinquum* A. Cunn. in *Ann. Nat. Hist.* 2: 205 (1839).

*G. ciliare* Hook. f. in Hook. *Lond. J. Bot.* 6: 461 (bis) (1847);

*G. umbrosum* Forst. f. ex Hook. f. *Handb. N.Z. Flor.* 121 (1854).

*Illustr.*: Wakefield, *Vict. Nat.* 72: 70 fig. 3 (1955); Fitch in Hooker f., *Flor. Tasm.* 1: t. 41, col. (1856), as *G. ciliare*.

*Vern.*: Maori Bedstraw. *Distr.*: DENPSTVWZ—also Tas., N.S.W., A.C.T., N.Z.

[Revisional studies are being carried out on the populations here included under *G. gaudichaudii* and *G. propinquum*, each of which are polymorphic assemblages, and a more satisfactory definition of taxa will doubtless involve nomenclatural changes.

The European white-flowered \**G. mollugo* L. and yellow-flowered \**G. verum* L. appeared at Neerim South (May 1951) and Kongwak near Outtrim (Jan. 1948) respectively. Both are perennials, with leaves in whorls of 6-12 and numerous flowers in terminal panicles, the latter being stoloniferous and tending to blacken when dried.]

### Family CAPRIFOLIACEÆ

1. Leaves *pinnate*; flowers in terminal *compound cymes or corymbs*; corolla *rotate*, <1 cm. long; stems *pthy* *Sambucus* (p. 619)  
Leaves *simple*; flowers in *pairs or spikes*; corolla *long-tubular*, 1.5-4.0 cm. long 2
2. Flowers in *axillary pairs*; corolla *2-lipped*, creamy-yellow, fragrant, 3-4 cm. long; bracts *hardly as long as ovary*, *greenish*; ovary 2- to 3-locular; berry *black*, *few-seeded*; leaves *entire* or nearly so (vigorous climber, naturalized along streams around Melbourne, Beaconsfield, Warburton & Eildon) \**Lonicera* (p. 619)  
Flowers in *drooping spikes*; corolla *regular*, white, 1.5-2.0 cm. long; bracts *at least as long as corolla*, *purplish*, conspicuous; ovary 5-locular; berry *dark purple*, *many-seeded*; leaves *toothed* (soft-wooded shrub, 5-10 ft. tall, along Loch River near Noojee)  
\**Leycesteria* (p. 620)

## SAMBUCUS L. (1753)

1. Leaflets *no more than twice* as long as broad, ovate-elliptic; stipules absent; flowers *5-partite*; fruit *purplish-black* (tall shrub or small tree to 20 ft., escaped from cultivation in Ballarat, Creswick & Daylesford districts, also Bendoc in far E. Gippsland):

\**S. nigra* L. *Spec. Plant.* 1: 269 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1126 (1957); Ross-Craig, *Drawings Brit. Plants* 14: t. 2 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1168 (1961); Petts in Meikle, *Brit. Trees & Shrubs* 99 fig. 33 (1958); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1270, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 250 fig. 2, col. (1915); Coste, *Flor. Franc.* 2: fig. 1647 (1903).

*Vern.*: Common Elder. *Distr.*: JNZ—also S.A., Tas., A.C.T., N.Z.

—Leaflets *3-4 times* as long as broad, ovate-lanceolate to lanceolate; flowers *3- or 4-partite*; fruit *white or yellowish* 2

2. Plant a  $\pm$  succulent shrub with *herbaceous branches*; leaflets light green, the lowest pair *close* to branch; stipules *leaf-like*, conspicuous; corolla *white*, sweet-scented (widespread in cool, shaded, often rocky places):

*S. gaudichaudiana* DC. *Prodr.* 4: 322 (1830).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 218, col. (1968); White in Bailey, *Compr. Cat. Qd Plants* fig. 205 (1913); Burbidge, *Flor. Aust. Cap. Terr.* fig. 345 (1970).

*Vern.*: White Elderberry. *Distr.*: CDEJKNPRSTVWXZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Plant a tall shrub or small tree with *woody branches*; leaflets deep green, the lowest pair *remote* from branch; stipules *absent*; corolla *yellowish* (very rare, at Snowy R., Brodribb R. & Ti-tree Ck near Orbost in E. Gippsland):

*S. australasica* (Lindl.) Fritsch in Engler & Prantl *Natürl. PflFam.* IV 4: 162 (1891).

*Tripetelus australasicus* Lindl. in Mitch. *Three Exped. E. Aust.* 2: 14 (1838).

*Illust.*: Rossiter in Ewart, *Handb. For. Trees* t. 221 (1925); Mueller, *Key Syst. Vict. Plants* 2: fig. 76 (1886); Mueller, *Plants indig. Colon. Vict.* t. 29 (1864-65); White in Bailey, *Compr. Cat. Qd Plants* fig. 204 (1913)—all except Rossiter as *S. xanthocarpa*.

*Vern.*: Yellow Elderberry. *Distr.*: WZ—also N.S.W., Qd.

## \*LONICERA L. (1753)

\**L. japonica* Thunb. *Flor. jap.* 89 (1784).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5047 (1960); Krüssmann, *Handb. Laubgehölze* 2: 83 fig. 45 c (1962); Bailey, *Standard Cycl. Hort.* 2: fig. 2204 (1935); Danguy in Lecomte, *Flor. gén. Indo-Chine* 3: 7 (1922)—flowers; Britton, *Flor. Bermuda* 372 (1918).

*Vern.*: Japanese Honeysuckle. *Distr.*: NPS—also N.S.W., N.Z.



## \*LEYCESTERIA Wallich (1824)

\**L. formosa* Wallich in Roxb. *Flor. ind.* (ed. Carey) 2: 182 (1824).

*Illust.*: Atkinson in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: 143 (1940), also in *J. N.Z. Dep. Agric.* 10: 533 (1915); Hay & Syngé, *Dict. gdn Plants* t. 1675, col. (1969); *Gartenflora* 28: 181 (1879); *Curtis's bot. Mag.* 65: t. 3699, col. (1839).

*Vern.*: Himalayan Honeysuckle (Spiderwort—N.Z.). *Distr.*: S—also Tas., N.Z.

## Family \*VALERIANACEÆ

Leaves *ovate-elliptic, acute*, 1" wide or more; flowers red, pink or white, in loose *cymose panicles*; corolla *spurred* at base; stamen 1; calyx *inrolled*, forming a *feathery pappus* on fruit (almost shrubby perennial 1-3 ft. high, sometimes escaping from Melbourne gardens, also at Fyansford river cliffs near Geelong and at Bendigo) \**Centranthus* (p. 620)

Leaves *oblong-ob lanceolate to linear, blunt*, <1" wide; flowers pale lilac, in dense *bracteate cymes* which are almost capitate; corolla *not spurred*; stamens 3; calyx *erect, not* forming a pappus (slender annuals, mostly <1 ft high) \**Valerianella* (p. 620)

## \*CENTRANTHUS DC. (1805)

\**C. ruber* (L.) DC. *Flor. franc.* 4: 239 (1805).

*Valeriana rubra* L. *Spec. Plant.* 1: 31 (1753).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 278 (1963); Hay & Syngé, *Dict. gdn Plants* t. 1222, col. (1969), as *Kentranthus ruber*; Ross-Craig, *Drawings Brit. Plants* 14: t. 29 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1216 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5065 (1960), as *Kentranthus ruber*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1331, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 253 fig. 4, col. (1915), as *Kentranthus ruber*; Everard, *Wild Flowers World* t. 17 fig. A, col. (1970).

*Vern.*: Red Valerian. *Distr.*: MNP—also S.A., Tas.

## \*VALERIANELLA Mill. (1754)

Fruit *oblong, hispid*,  $\pm$  1 mm. long, crowned by the *distinct, collar-like*, 5- to 6-toothed calyx which is *strongly reticulate* and as broad as fruit (Wodonga, Werribee Gorge, Creswick and Port Fairy districts):

\**V. eriocarpa* Desv. in *J. Bot., Paris* 2: 314, t. 11 fig. 2 (1809).

*V. dentata* sens. Ewart *Flor. Vict.* 1055 (1931), *non* Pollich (1776).

*Illust.*: Desvaux (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1129 (1957); Ross-Craig, *Drawings Brit. Plants* 14: t. 34 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1210 (1961); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1353, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 145 d & e (1915); Coste, *Flor. Franc.* 2: fig. 1746 (1903).

*Vern.*: Italian Corn-salad. *Distr.*: EJNR—also S.A., Tas.

Fruit *subglobose*, *glabrous*, corky,  $\pm$  2 mm. long, the calyx *indistinct* and 1-toothed or rudimentary (Campaspe R. above Eppalock Weir, also Hamilton district):

\**V. locusta* (L.) Betcke *Animadvers. bot. Valerian.* 10 (1826).

*Valeriana locusta* L. *Spec. Plant.* 1: 33 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 14: t. 30 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1207 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5060 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 253 fig. 3, col. (1915), as *V. olitoria*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1346, col. (1922), as *V. olitoria*; Coste, *Flor. Franc.* 2: fig. 1739 (1903), as *V. olitoria*.

*Vern.*: Corn-salad (Lamb's Lettuce). *Distr.*: DMN.

### Family \*DIPSACACEÆ

Stems *prickly* along the prominent *angular ribs*, >3 ft. tall, >5 mm. diam.; stem-leaves *entire* or *toothed*, their bases *connate*, forming a water-holding cup; flower-heads massive, 1-3" long, their involucre and receptacular bracts *long and spiny*; corollas lilac to purplish, of *uniform size*, 10-15 mm. long (occasional in cooler W. districts, between Melbourne & Hamilton-Macarthur area)

Stems neither prickly nor angled, <3 ft. tall, mostly <5 mm. diam.; stem-leaves *pinnately lobed* or *lyrate*, the bases *never connate*; flower-heads <1" long, their bracts *not spiny*; corollas dark purple, lilac or white, those of the outer flowers *much larger* than of central ones (scattered from Port Fairy through central W. to Seymour-Tabilk area)

\**Dipsacus* (p. 621)

\**Scabiosa* (p. 622)

### \*DIPSACUS L. (1753)

\**D. fullonum* L. *Spec. Plant.* 1: 97 (1753)

subsp. *fullonum*.

*D. sylvestris* Huds. *Flor. angl.* 49 (1762).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5066 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1217 (1961); Ross-Craig, *Drawings Brit. Plants* 14: t. 35 (1960), as *D. fullonum* subsp. *sylvestris*; M. E. R. in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 53 n. 1 (1940), as *D. silvester*; Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 253 fig. 5, col. (1915), as *D. silvester*; Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1355, col. (1922), as *D. sylvestris*; Everard, *Wild Flowers World* t. 17 fig. B, col. (1970).

*Vern.*: Wild Teasel. *Distr.*: EJNP—also S.A., Tas., N.Z.

[This is the Wild Teasel, in which the involucre bracts *curve upwards*, sometimes overtopping the head, while the receptacular bracts end in a *straight spine*. The closely related Fullers' Teasel (apparently not naturalized in Victoria) is subsp. *sativus* (L.) Thell., distinguished by its  $\pm$  *horizontal* involucre bracts and *recurved* spine-tips to the receptacular bracts. Heads of the latter were formerly used in "fulling" (production of a nap on woollen cloth).]

## \*SCABIOSA L. (1753)

\**S. atropurpurea* L. *Spec. Plant.* 1: 100 (1753).*S. maritima* sens. Ewart *Flor. Vict.* 1056 (1931), *non strict.* L. (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1130 (1957); Hay & Syngé, *Dict. gdn Plants* t. 373, col. (1969); Abrams, *Ill. Flor. Pacific States* 4: fig. 5068 (1960); Bailey, *Standard Cycl. Hort.* 3: fig. 3564 (1935); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1370, col. (1922), as *S. maritima*; *Garden* 21: 118 (1882); *Gartenflora* 30: 282 (1881); *Curtis's bot. Mag.* 7: t. 247, col. (1793).  
*Vern.*: Pincushion. *Distr.*: DEHJMN—also S.A., Tas., N.S.W.

## Family CUCURBITACEÆ

1. Fruit *glabrous* at maturity, >2" long (often 4" or more), with a *hard thick rind*; tendrils variously branched 5  
 Fruit sometimes hairy or bristly, <2" long (often <1½"), *thin-rinded* 2
2. Tendrils with 2 or 3 branches; flowers white to pale yellow-green, 5-7 mm. diam., the male with filaments *united in a column*; anthers sinuous; fruit ovoid, ± 1 cm. long, covered with *barbed spines*; leaves angular, 2-3" across (delicate climber of E. Gippsland, chiefly near-coastal) 3  
*Sicyos* (p. 624)  
 Tendrils simple or absent; male flowers with filaments *free* or *united* only at base; bristles (if present) on fruit soft, *not barbed* 3
3. Fruit *glabrous*, globular, 10-14 mm. diam.; corolla *minute* (<2 mm. long and wide); anthers short and *straight*; leaves scabrid, orbicular-cordate and crenate-lobed, ± 1" across (rare slender vine of N.W. Mallee) 4  
*Melothria* (p. 623)  
 Fruit *bristly*, >15 mm. long; corolla 4-10 mm. long, yellow; anthers *sinuous*; leaf-blades 1-3" across 4
4. Tendrils *present*; leaves *membranous*, almost *glabrous* above, with short tubercle-based hairs beneath, deeply and *palmarately 5-lobed*; fruit ± *globular*, 1.5-2.5 cm. diam., with *scattered* soft bristles or prickles; seeds *pale yellow*, 3-4 mm. long (widespread on open sandy ground) 5  
*Cucumis* (p. 624)  
 Tendrils *absent*; leaves *thick, fleshy, scabrid* above but *white-tomentose* beneath, triangular-cordate, *undulate*, *without deep lobing*; fruit shortly *cylindrical*, ± 3 cm. long, *densely bristly*, falling at maturity and *explosively* squirting out the numerous seeds from the ruptured attachment of pedicel; seeds *dark brown* (scattered in drier W., N.W. & N. districts) 6  
*Ecballium* (p. 623)
5. Leaf-blade <3" across, *deeply palmatifid*, with rounded sinuses; flowers <1.5" wide, the pedicel in male <1" long; corolla pale yellow, 5-lobed almost to base; ovary ± villous; fruit *globular*, mottled with green and white; seeds <12 mm. long (weeds of N.W. Mallee) 7  
*Citrullus* (p. 623)

Leaf-blade >3" across (often 6" or more), *not* deeply lobed; flowers 2-4" wide, the pedicel in male >1" long (sometimes as long as leaf); fruit variously shaped (occasional garden escapes) 6

6. Corolla *golden-yellow, bell-shaped*, 5-lobed to middle, daffodil-scented; anthers *united* on a staminal column \**Cucurbita* (p. 624)  
Corolla *white, funnel-shaped*, 5-lobed to base; anthers only *slightly cohering* \**Lagenaria* (p. 624)

### MELOTHRIA L. (1753)

*M. micrantha* (F. Muell.) F. Muell. ex Cogn. in Alph. DC. & C. DC. *Monogr. Phan.* 3: 603 (1881).

*Cucurbita micrantha* F. Muell. in *Trans. phil. Soc. Vict.* 1: 17 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1132 A-C (1957); Mueller, *Key Syst. Vict. Plants* 2: fig. 77 (1886), as *M. muelleri*.

*Vern.*: Mallee Cucumber. *Distr.*: AFG—also S.A., Cent. Aust.

### \*ECBALLIUM A. Rich. (1825)

\**E. elaterium* (L.) A. Rich. in *Dict. Hist. nat.* 6: 19 (1825).

*Momordica elaterium* L. *Spec. Plant.* 2: 1010 (1753).

*Illust.*: Koppel, *Flor. Israel* t. [18] (1949); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 4: fig. 1024, col. (1921); Hegi, *Ill. Flor. Mittel-Eur.* 6: 313 fig. 168 (1915); Javorka & Csapody, *Icon. Flor. Hungar.* 498 (1933) & t. 36 (1934); Bailey, *Standard Cycl. Hort.* 1: fig. 1370 (1935); Coste, *Flor. Franc.* 2: fig. 1325 (1903); Baillon, *Hist. Plant.* 8: fig. 274-82 (1886); *Curtis's bot. Mag.* 44: t. 1914, col. (1817), as *Momordica elaterium*; Everard, *Wild Flowers World* t. 34 fig. E, col. (1970).

*Vern.*: Squirting Cucumber. *Distr.*: BGHJMNP—also S.A., Qd.

### \*CITRULLUS Schrad. ex Eckl. & Zeyh. (1836)

Leaves almost *glabrous* above; pubescent beneath; seeds 8-10 mm. long, *pale brown, with fine blackish markings* (annual of wide range in far N.W.):

\**C. lanatus* (Thunb.) Mansf. in *Kulturpfl. Beih.* 2: 421 (1959).

*Momordica lanata* Thunb. *Prodr. Plant. capens.* 13 (1794);

*C. vulgaris* Schrad. ex Eckl. & Zeyh. *Enum. Plant. Afr. austr. extratrop.* 279 (1836);

*Cucurbita citrullus* L. *Spec. Plant.* 2: 1010 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 109 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1133 (1957), as *C. vulgaris*; O'Neil, *J. Dep. Agric. S. Aust.* 61: 134 (1957), as *C. vulgaris*; Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 115 (1958), as *Colocynthis citrullus*; Marloth, *Flor. S. Afr.* 3: t. 53 fig. B col., also 201 fig. 87 (1932), as *Citrullus vulgaris*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 347 (1970).

*Vern.*: Wild or Bitter Melon (Camel Melon). *Distr.*: AFL—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust.

Leaves *scabrid-hairy* on both surfaces; seeds  $\pm$  6 mm. long, *dull yellowish*, without any dark streaks (perennial in Hattah Lakes Nat. Park, and perhaps other localities in far N.W.):

\**C. colocynthis* (L.) Schrad. in *Linnaea* 12: 414 (1838).

*Cucumis colocynthis* L. *Spec. Plant.* 2: 1011 (1753).

*Illust.*: Müller & Pax in Engler & Prantl, *Natürl. PflFam.* IV 5: 27 fig. 17 (1889), also in *Pflanzenreich* IV 275\* (Heft 88): 110 fig. 13 (1924); Makino, *Ill. Flor. Japan* [111] (1924); Basu, *Ind. med. Plants* t. 460 (1918); Pammel, *Manual poison. Plants* fig. 750 (1911).

*Ver.*: Colocynth. *Distr.*: AF—also S.A., ?N.S.W., Qd, Cent. Aust.

### \**CUCUMIS* L. (1753)

\**C. myriocarpus* Naudin in *Ann. Sci. nat. sér.* 4, 11: 22 (1859).

*C. prophetarum* Jacq. *Hort. bot. Vindob.* 1: t. 9 (1770), non L. (1755).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 110 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1134 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 116 (1958); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 8: 322, t. opp. 320 col. (1959); Gardner in Meadly, *Weeds W. Aust.* 136 col., 138 (1965); Steyn, *Toxicol. Plants S. Afr.* 385-87 (1934); Burbidge, *Flor. Aust. Cap. Terr.* fig. 346 (1970).

*Ver.*: Paddy Melon (Gooseberry Cucumber). *Distr.*: ABCDFHJMNPRVW—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust.

### *SICYOS* L. (1753)

*S. angulata* L. *Spec. Plant.* 2: 1013 (1753).

*Illust.*: Ewart, *Flor. Vict.* fig. 333 & 334 (1931); Javorka & Csapody, *Icon. Flor. Hungar.* 499 (1933); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 175 (1915); Georgia, *Manual Weeds* fig. 283 (1914).

*Ver.*: Star Cucumber. *Distr.*: WZ—also Tas. (Bass Strait), N.S.W., Qd, N.Z.

[The widely grown, large-fruited pumpkins and marrows belong mainly to an American species, *Cucurbita maxima* Duchesne, sporadic plants of which may occur on rubbish-tips and other places where garden and kitchen refuse is deposited; this long-running trailer is distinguished by its very large almost orbicular leaves, short and spongy, nearly cylindrical (not angled) fruiting-pedicels and plump obtusely margined seeds (0.5-1" long). White-flowered, musky-scented *Lagenaria siceraria* (Molina) Standley, the Bottle Gourd or Calabash Gourd, is another long-running annual that may occasionally appear outside gardens in warmer northern parts of the State; the smooth fruit (up to 3 ft. in length) dries with a hard durable shell, and has been used for drinking vessels. Neither species can be regarded as self-propagating and truly naturalized here.]

### Family CAMPANULACEÆ

#### WAHLENBERGIA Schrad. (1814)

[Ewart, *Flor. Vict.* 1060 (1931), recognized only a single species of *Wahlenbergia*, viz. *W. gracilis* (Forst. f.) Alph. DC., the type of which has been ascribed to New

Caledonia. N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 201-235 (1947) provided "Critical Notes" on the genus and admitted nine species as Victorian, describing several of these as new and reducing *W. gracilis* to synonymy under *W. marginata* (Thunb.) Alph. DC. (type from Hondo, Japan). Monographing *Wahlenbergia* in *Flor. Malesiana* 6: 111-118 (1960), P. Tuyn synonymized all of the Australian species recognized by Lothian in 1947 (with the exception of *W. gymnoclada* and *W. tadgellii* which he had apparently not examined) under *W. marginata*, allowing a "high degree of variability" to the latter—ranging all the way from Ceylon & China to Tasmania & New Zealand. More recent papers by Lothian in *Vict. Nat.* 72: 165-69 (1956) and by R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89: 235-40 (1965) have variously added to and reduced the number of Victorian species which now stands at eleven. Distinctions between some of these taxa are certainly not clear-cut, and the writer has found it most difficult to construct a simple workable key for their identification.]

1. Plant *annual* (or ephemeral); lower leaves opposite, obovate to oblanceolate, *hirsute*,  $\pm$  crowded, with undulate margins, *withering rather early*; stems 1-12" tall, branched near base, rarely simple; calyx glabrous or hairy, subglobular; corolla <1 cm. wide, the tube 2-3 mm. long and slightly exceeding the short sepals; filaments *longer* than anthers; capsule *subglobose*, 3-6 mm. diam. (very widespread):

*W. gracilentia* N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 217, 218 fig. 2 (1947).

*Illust.*: Lothian (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1135 B (1957), also Robertson in Black, *l.c.*: fig. 1137 C-D (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 10 n. 332 (1965).

*Vern.*: Annual Bluebell. *Distr.*: ABCDEFHJMN PSTVW—also W.A., S.A., Tas., N.S.W., A.C.T., ?Qd.

—Plants *perennial*; either the corolla >1 cm. across or capsule obconical; filaments *no longer* (and usually much shorter) than anthers 2

2. Stems erect, <6" high, *simple*, 1-flowered; leaves oblong-spathulate, to 1 cm. long, almost *glabrous*, suberect, thyme-like and *densely crowded* along basal portion of stem; flowers relatively large (12-18 mm. wide), deep blue, the corolla-tube slightly exceeding sepals (subalps of Dargo High Plains & Nunniong Plateau):

*W. densifolia* N. Lothian in *Vict. Nat.* 72: 167, t. 6 fig. 3 as "*W. densiflora*" in err. (1956).

*Illust.*: Lothian (*l.c.*), as *W. densiflora*.

*Vern.*: Fairy Bluebell. *Distr.*: W—also N.S.W. (alps).

—Stems normally >6" high, often branched; larger leaves >1 cm. long or lower leaves and bases of stems *hirsute* 3

3. Flowers *small* (rarely attaining 12 mm. in width), 4- or 5-partite; sepals 1-3 mm. long; capsule *narrowly obconic*; leaves alternate (very wide-spread, weedy plant with fleshy rootstock; stem-system eventually becoming extensive, with numerous filiform glabrous branchlets sprawling or ascending amongst other vegetation):

**W. quadrifida** (R. Br.) Alph. DC. *Monogr. Campan.* 144 (1830).

*Campanula quadrifida* R. Br. *Prodr. Flor. Nov. Holl.* 561 (1810).

*Illust.*: Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1138 A-B (1957); Lothian, *Vict. Nat.* 63: 232 (1947); Lothian, *Proc. Linn. Soc. N.S.W.* 71: 211 (1947).

*Vern.*: Sprawling Bluebell. *Distr.*: ABCDEHJKNPRSTVWZ—also S.A., Tas., N.S.W.

—Flowers normally >12 mm. wide

4. Corolla  $\pm$  *campanulate*, the limb often >2 cm. diam. and tube 3-11 mm. long (as long as or longer than sepals)

Corolla *rotate* or *broadly funnel-shaped*, pale blue, the limb <2 cm. diam. and tube <3 mm. long (manifestly *shorter* than sepals)

5. Plant  $\pm$  *hairy*, at least on lowest leaves and lower parts of stems; leaves sometimes denticulate, normally >2 mm. wide; sepals 3-5 mm. long; corolla *funnel-shaped*; capsule *obconic to barrel-shaped*, 6-12 mm. long or more (widespread ascending herb of open grassy places):

**W. tadgellii** N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 228 (1947).

*Vern.*: Tadgell's Bluebell. *Distr.*: ABDEFJNPRSTWZ—also S.A., Tas., N.S.W., A.C.T.

—Plant entirely *glabrous*; leaves *entire*, mostly *narrow-linear*, <2 mm. wide (sometimes appearing almost filamentous); sepals <3 mm. long; corolla flattened and *rotate*; capsule *obovoid*, 3-4 mm. long (much branched, very slender and often long-trailing weak riverine herb of sandy stream- and lagoon-banks along Murray R., also in Wyperfeld Nat. Park):

**W. fluminalis** (J. M. Black) Wimmer ex Hj. Eichler in *Taxon* 12: 297 (1963).

*Cephalostigma fluminense* J. M. Black in *Trans. roy. Soc. S. Aust.* 58: 184, t. 11 fig. 1 (1934).

*Illust.*: Black (*l.c.*):

*Vern.*: River Bluebell. *Distr.*: ABFGLMQR—also S.A., N.S.W., Qd.

6. Stems mostly *numerous*, *much-branched* and often densely tufted at base, *glabrous* or very sparsely bristly below; leaves *glabrous*, *narrow-linear*, mostly *alternate*; corolla bright blue inside, often *golden-bronze to whitish* externally, the limb 16-22 mm. diam. and tube 5-8 mm. long; capsule *narrowly obconic*, 3-10 mm. long (widespread on open grasslands and pastoral country, except in alps):

**W. communis** R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89: 237 (1965).

*W. bicolor* N. Lothian [quoad descript., *non typific.*] in *Proc. Linn. Soc. N.S.W.* 71: 230 fig. 4 (1947)—*nom. illegit.*

*Illust.*: Lothian (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 112, col. (1965); Robertson in Black, *Flor. S. Aust.* ed. 2: fig. 1137 A-B (1957), as *W. bicolor*.

*Vern.*: Tufted Bluebell. *Distr.*: ABCEFJHKMNPRSVW—also S.A., N.S.W., A.C.T.

—Stems *few, sparingly (or not) branched*; corolla *never bronzy outside*; capsule *broadly obconic to obovoid* 7

7. Corolla very *broadly campanulate*, the limb 15-18 mm. diam. (of obovate lobes 5-8 mm. wide) and tube only 2-4 mm. long; capsule 4-7 mm. long; leaves *alternate*, linear to lanceolate, usually with scattered white hairs on midrib, the margins  $\pm$  undulate and remotely callous-dentate (granite hills of farther N.E., also near Bairnsdale):

*W. graniticola* R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 89: 239 (1965).

*Vern.*: Granite Bluebell. *Distr.*: RVW—also N.S.W., A.C.T.

—Corolla rather *narrowly campanulate*, the limb >18 mm. diam. and tube >4 mm. long 8

8. Stems  $\pm$  *decumbent, short*; leaves normally all *opposite, bristly-hirsute*, blunt, obovate-oblong (2-3 cm. long), with thickened crispate-undulate margins; flowers *deep royal blue to purple*, spectacular, 2.5-3.5 cm. diam.; sepals 3-5 mm. long (subalpine, often amongst rocks in woodlands of *Eucalyptus pauciflora* var. *alpina*):

*W. gloriosa* N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 224 (1947).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 536, col. (1968); Mass, *Flowers aust. Alps* 35 (1967); Lothian, *Vict. Nat.* 72: t. 6 opp. 169 fig. 1 (1956).

*Vern.*: Royal Bluebell. *Distr.*: RSVW—also N.S.W., A.C.T.

—Stems *erect, elongated*; if plants ever subalpine, then either leaves glabrous and cauline ones alternate or sepals >5 mm. long 9

9. Leaves all *alternate, glabrous* or nearly so, oblanceolate to spatulate, mostly *crowded near base of stem*; flowers *pale blue to lilac*, conspicuously *nodding* in bud-stage; sepals and ovary *waxy-lustrous* (widespread on damp montane to alpine grasslands, from Jamieson R. sources E. & N.E. to Snowy Mountains, also Nunniong Plateau):

*W. ceracea* N. Lothian in *Vict. Nat.* 72: 166, t. 6 fig. 2 (1956).

*Illust.*: Lothian (*l.c.*); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 13, col. (1962), as *W. sp.*

*Vern.*: Waxy Bluebell. *Distr.*: NRSVW—also Tas., N.S.W., A.C.T.

—Leaves mostly *opposite,  $\pm$  hairy*; flowers bright blue, *not* conspicuously nodding in bud 10

10. Leaves confined to lower part of *long naked unbranched peduncles*, often narrow-linear, almost glabrous on upper face, *not* or hardly crisped at margins; capsule *longer* than the *erect* sepals (southern lowlands, often on sandy heaths, from Lower Glenelg R. to Mallacoota):

*W. gymnoclada* N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 227 (1947).

*Illust.*: Rosser, *Wildflowers Vict.* 49, col. (1968).

*Vern.*: Naked Bluebell. *Distr.*: CDEHJNPTWZ—also Tas., ?N.S.W.



—Leaves often scattered on *branching peduncles*,  $\pm$  *hirsute* on both surfaces, *undulate* and *crisped at margins*; capsule *shorter* than the *spreading sepals* (very widespread variable herb, the calyx sometimes hairy in robust forms on northern grasslands):

*W. stricta* Sweet *Hort. Brit.* ed. 2: 593 (1830).

*Campanula gracilis* Forst. f. var. *stricta* R. Br. *Prodr. Flor. Nov. Holl.* 561 (1810);

*W. vinciflora* sens. N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 220 (1947), *non* (Vent.) Decne. (1849)—*nom. illegit.*;

*W. trichogyna* W. T. Stearn in *Gdnrs' Chron.* 130: 169 (1951);

*W. consimilis* N. Lothian in *Proc. Linn. Soc. N.S.W.* 71: 223 (1947);

?*W. billardieri* N. Lothian *l.c.* 71: 226 (1947).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 360, col. (1968); Leigh & Mulham, *Pastoral Plants Riverine Plain* 111, col. (1965); Stones in *Curtis's bot. Mag.* 172: n. ser. t. 343, col. (1959), as *W. consimilis*; Galbraith, *Wildflowers Vict.* ed. 3: t. 150 (1967), as *W. consimilis*; Black, *Flor. S. Aust.* ed. 2: fig. 1135 A, C & D (1957), as *W. trichogyna*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 351 (1970).

*Vern.*: Tall Bluebell. *Distr.*: ABCDEFHJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[The large non-Australian genus *Campanula* L. differs from *Wahlenbergia* in having filiform stigmas and laterally opening capsules. Although no species appears to be truly naturalized in Victoria, many are cultivated in rock- or alpine gardens, and a few may persist or even spread locally in cool shaded situations (e.g. the Dandenong Ranges); of such are the stoloniferous Eurasian *C. rapunculoides* L. (with rigidly erect flowering stems 1-2 ft. high and racemes of nodding, purple, funnel-shaped flowers 2-3 cm. long), also the procumbent Dalmatian *C. poscharskyana* Degen & *C. portenschlagiana* Roem. & Schult., both with long-petiolate ivy-like leaves—flowers of the former are pale blue, widely expanded (2-3 cm.), star-shaped and with hairy calyx, those of the latter deep blue and bell-shaped with  $\pm$  glabrous reflexing sepals.]

### Family LOBELIACEÆ

1. Corolla-tube *slit open to the base* on the posterior side, the limb 2-lipped; stamens attached *at or near the base* of corolla-tube 3  
Corolla-tube *not* or only very shortly slit, the limb almost *regular*; stamens fused with corolla-tube *for at least half its length* 2
2. Fruit a *dehiscent capsule* 4-18 mm. long; sepals 1-7 mm. long  
*Isotoma* (p. 632)  
Fruit *indehiscent*, 3 mm. long; sepals *minute* (<1 mm. long); leaves narrowly oblong, 3-5 mm. long, mostly with 3-5 bold teeth (low, tenuous riparian herb of lagoons on Goulburn R. & lower Mitta Mitta R., the single Victorian species apparently endemic and very rare)  
*Hypsela* (p. 633)
3. Fruit a capsule *opening by apical valves*  
*Lobelia* (p. 631)  
Fruit *indehiscent*, usually  $\pm$  succulent  
*Pratia* (p. 629)

## PRATIA Gaudich. (1829)

1. Flowering pedicels mostly manifestly *longer* than the leaves (flowers often *bright blue* or purplish) 5  
Flowering pedicels *not* or hardly exceeding the floral leaves (plants totally glabrous, with *whitish* flowers) 2
2. Leaves *in one plane*, *subsessile*, *broad* at base, 1-3 cm. long, with shortly *toothed margins*; fruit 5-9 mm. wide (poisonous procumbent or ascending plant of N., N.W. & W. lowlands, often along inland waterways, with an isolated record for Bennison High Plains):

*P. concolor* (R. Br.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 641 (1917).

*Lobelia concolor* R. Br. *Prodr. Flor. Nov. Holl.* 563 (1810);

*P. erecta* Gaudich. in Freyc. *Voy. aut Monde (Bot.)* 456, t. 79 (1829).

*Illust.*: Gaudichaud (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 111 (1965); Mercer in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 136 (1958); Mercer in Hurst, *Poison Plants N.S.W.* 400 (1942), as *Lobelia concolor*; Mercer in Vickery, *Agric. Gaz. N.S.W.* 50: 592 (1939), as *L. concolor*; Bailey, *Weeds & susp. poison. Plants Qd* fig. 178 (1906), as *P. erecta*; Bailey, *Qd agric. J.* 4: t. 100 opp. 285 (1899), as *P. erecta*.

*Vern.*: Poison Pratia (Milky Lobelia—N.S.W.). *Distr.*: ACFGHLMNS—also S.A., N.S.W., Qd.

—Leaves narrowed into a *short petiole*, *entire* (rarely some leaves denticulate in *P. platycalyx*); fruit 3-4 mm. wide 3

3. Leaf-blade *linear*, 4-10 mm. long,  $\pm$  1 mm. wide; flowers almost *sessile*, the corolla 3-4 mm. long (rare, on drying mud around alpine pools at Mt. Buffalo and in Mt. Wellington area):

*P. gelida* (F. Muell.) Benth. *Flor. aust.* 4: 132 (1868).

*Lobelia gelida* F. Muell. *Fragm. Phyt. Aust.* 4: 183 (1864).

*Illust.*: Wimmer, *Pflanzenreich* IV 276 b (Heft 106): 113 fig. 29 d (1943).

*Vern.*: Snow Pratia. *Distr.*: RS—also N.S.W.

—Leaf-blade *obovate-lanceolate* to *spathulate*, 2-6 mm. wide; flowers distinctly *stalked* 4

4. Foliage *in one plane*, *pressed close to the earth*; corolla 7-10 mm. long (on mud near fresh water of montane to alpine morasses of E. highlands where widespread):

*P. surrepens* (Hook. f.) F. E. Wimmer in *Pflanzenreich* IV 276b (Heft 106): 108 (1943).

*Lobelia surrepens* Hook. f. *Flor. Tasm.* 1: 237 (1856), t. 69 a, col. (1857).

*Illust.*: Fitch in Hooker f. (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 537, col. (1968).

*Vern.*: Mud Pratia. *Distr.*: RSVWZ—also Tas., N.S.W.

—Foliage *ascending*,  $\pm$  lustrous; corolla 3-5 mm. long (saline marshes, chiefly near the coast where often luxuriant):

**P. platycalyx** (F. Muell.) Benth. *Flor. aust.* 4: 132 (1868).

*Laurentia platycalyx* F. Muell. in *Trans. Vict. Inst.* 39 (1855).

*Illust.*: Lee, *Wild Life (Melb.)* 13: 353 (1951); Wimmer, *Pflanzenreich* IV 276 b (Heft. 106): 113 fig. 29 e (1943).

*Vern.*: Salt Pratia. *Distr.*: DEJKNPW—also S.A., Tas.

5. Corolla-lobes *subequal and spreading* ( $\pm$  5 mm. long); sepals *without* basal teeth; leaf-blade *green* on both sides, usually <10 mm. long, ovate to *subrotund*, bluntish, glabrous to pubescent (widespread in swamps and damp shaded forest-land almost throughout State, ascending to alps):

**P. pedunculata** (R. Br.) Benth. *Flor. aust.* 4: 133 (1868).

*Lobelia pedunculata* R. Br. *Prodr. Flor. Nov. Holl.* 563 (1810);

*P. puberula* Benth. *l.c.* 4: 133 (1868).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 413 fig. 93 (1963); Fitch in Hooker f., *Flor. Tasm.* 1: t. 69, fig. B, col. (1857), as *Lobelia pedunculata*; Schönland in Engler & Prantl, *Natürl. PflFam.* IV 5: 68 fig. 42 (1889); Burbidge, *Flor. Aust. Cap. Terr.* fig. 349 (1970).

*Vern.*: Matted Pratia. *Distr.*: CDEJKMNPRSVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

[Bentham's *P. puberula* was separated from *P. pedunculata* on the basis of its shorter pedicels ("scarcely longer than leaves") and broader fruits (4-6 mm. diam.), but these two characters are quite variable within populations and show little correlation with other features. F. E. Wimmer, when monographing *Pratia* in *Pflanzenreich* IV 276 b (1943), admitted both species, but remarked (p. 110): "Verisimiliter sunt *P. pedunculata* et *P. puberula* una bona species, cum formæ transitoriae occurrent". The present writer agrees and can find no good reason for keeping them apart. In swamps of the Lower Glenelg R. region white-flowered puberulent plants intermingle with blue-flowered glabrous ones, but remain distinct enough. On the other hand, at Mt. Federation (N.E. of Marysville), condensed pubescent blue-flowered plants occur indiscriminately with etiolated glabrous white-flowered plants. Further studies are needed to evaluate the taxonomic significance (if any) of such variations.]

—Corolla-lobes *mauve or pinkish*, manifestly *unequal*, the upper *erect pair acuminate*, shorter and only *half as wide* as the 3 lower spreading lobes which are 6-8 mm. long; sepals each with a small *distinct basal tooth* on each side; leaf-blade *purplish* on under-side, mostly 10-20 mm. long, ovate to *oblong-lanceolate*, irregularly and *acutely toothed*, always *glabrous* (as are the branches) (E. Gippsland, from Orbost to Mallacoota):

**P. purpurascens** (R. Br.) F. E. Wimmer in *Pflanzenreich* IV 276 b (Heft. 107): Suppl. 764 (1956).

*Lobelia purpurascens* R. Br. *Prodr. Flor. Nov. Holl.* 563 (1810).

*Illust.*: Cochrane; Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 48, col. (1968); Everist, *Common Weeds Farm & Pasture* fig. 63 (1957); Mueller, *Key Syst. Vict. Plants* 2: fig. 91 (1886); Schönfeld in Mueller, *Plants indig. Colon. Vict.* t. 50 (1864-65); Helmsing in White, *Qd agric. J.* new ser. 36: 271 t. 62 (1931); Bailey, *Weeds & susp. poison. Plants Qd* fig. 177 (1906); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 181 (1901)—all but the first as *Lobelia purpurascens*.

*Vern.*: Purplish Pratia. *Distr.*: WZ—also N.S.W., Qd.

—As for the last, but corolla mostly *clear blue*, upper pair of corolla-lobes *not* acuminate and > half the width of lower 3 lobes, basal teeth of sepals rudimentary, and leaf-blades entire to *obscurely and bluntly toothed* (scattered in swamps of W. & S.W., from Curdies R. to Lower Glenelg R.):

**P. sp.**—aff. *P. purpurascens* (R. Br.) F. E. Wimmer.

*Distr.*: DEK—also ?S.A.

### LOBELIA L. (1753)

1. Flowers solitary in upper axils, their pedicels *not or slightly longer* than floral leaves; corolla pale bluish, 6-9 mm. long; only the *two lower anthers* bearing a tuft of bristles; capsule *not gibbous* (perennials) 3  
Flowers either racemose *or* solitary and on peduncles much longer than leaves; corolla 10-15 mm. long; *all anthers* surmounted by a tuft of bristles; capsule *gibbous* on the upper side (glabrous erect annuals to 1 ft. high) 2
2. Leaves *linear to oblong*, withering early; flowers several to many in a *one-sided raceme*; corolla deep blue,  $\pm$  15 mm. long; capsule 6-10 mm. long (widespread in coastal and hilly districts, ascending to alps):

**L. gibbosa** Labill. *Nov. Holl. Plant. Specim.* 1: 50, t. 71 (1805).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 405, col. (1968); Rosser, *Wildflowers Vict.* 93, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 151 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1135 E-H (1957); Fraser, *Proc. Linn. Soc. N.S.W.* 56: 514 (1931); *Wild Flowers Aust.* (Shell Oil Co.) 25 (?1931); Sulman, *Wild Flowers N.S.W.* 2: t. 44 (1914); Garnet, *Wildflowers Wilson's Prom.* t., n. 757 opp. 94 (1971); Burbidge, *Flor. Aust. Cap. Terr.* fig. 348 (1970).

*Vern.*: Tall Lobelia. *Distr.*: BCDEJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[This species is rather polymorphic, and segregates have been recognized by some authors. The var. *simplicicaulis* (R. Br., *ut sp.*) F. M. Bailey *Qd Flor.* 916 (1900) is frequent in Victoria and distinguishable by its more slender habit, acute corolla-lobes, less bulging capsules and relatively larger seeds. The var. *browniana* (Roem. & Schult., *ut sp.*) F. M. Bailey *l.c.*—also Victorian—is characterized by its relatively small corolla ( $\pm$  10 mm. long), short capsule (3-4 mm.) and exceedingly small seeds (<0.25 mm. long).]

—Leaves *obovate-cuneate* or  $\pm$  rhombic, with a few coarse teeth; flowers *solitary* at ends of several peduncles that far exceed the leaves; corolla blue (rarely whitish),  $\pm$  12 mm. long; capsule  $\pm$  6 mm. long (scattered in S. forests and near-coastal heaths, from Wilsons Prom. to Portland district):

**L. rhombifolia** de Vriese in Lehm. *Plant. Preiss.* 1: 397 (1845).

*Vern.*: Tufted Lobelia. *Distr.*: DEJKNPT—also W.A., S.A., Tas.

3. Stems *terete, prostrate*; leaves *subsessile*, lanceolate to narrow-elliptic, to 2 cm. long; peduncles obviously *pubescent*, often *longer* than leaves; sepals nearly as long as *obovoid ovary* (widespread and frequent in swampy tracts):

**L. pratioides** Benth. *Flor. aust.* 4: 131 (1868).

*Illust.*: Ewart, *Flor. Vict.* fig. 336 (1931); Lee, *Wild Life (Melb.)* 13: 352 (1951).

*Vern.*: Poison Lobelia. *Distr.*: ACDEHJKMNPSTWZ—also S.A., Tas., N.S.W.

—Stems *angled or winged* by decurrent leaf-bases, procumbent or ascending; leaves *shortly petiolate*, oblanceolate to cuneate, 1-5 cm. long; peduncles (also leaves and branches) mostly *glabrescent*; sepals *much shorter than cylindrical ovary* (southern districts bordering swamps, water-courses or soakages from coastal cliffs):

**L. alata** Labill. *Nov. Holl. Plant. Specim.* 1: 51, t. 72 (1805).

*L. anceps* sens. auctt. Aust. plur., non L. f. (1781).

*Illust.*: Labillardière (*l.c.*); Wimmer, *Pflanzenreich* IV 276 b (Heft 107): 468 fig. 79 a (1953).

*Vern.*: Angled Lobelia. *Distr.*: CDEHJKMNPTWZ—also S.A., Tas., N.S.W., Qd, N.Z.

[Ewart, *Flor. Vict.* 1062 (1931) treats the South African *L. erinus* L. as a naturalized weed, with the remark "widely spread in Victoria". As in so many annual ornamentals of the garden, this species is self-propagating by seed (optimally in damper shaded situations), but *only* in and near gardens—the writer has never seen it spontaneous elsewhere in this State. *L. erinus* most closely resembles the indigenous *L. rhombifolia*, differing in the occasional presence of scattered bristly hairs, bisexual flowers, relatively much broader corolla-lobes, filiform sepals, non-gibbous capsules, and upper 2 anthers without bristle-tufts.]

### ISOTOMA R. Br. ex Lindl. (1826)

[In F. E. Wimmer's monograph on the *Lobeliaceæ*, *Pflanzenreich* IV 276 b (Heft 107): 398-407 (1953), *Isotoma* was reduced to sectional rank under the otherwise African & N. American genus *Laurentia* (Micheli) Adans. R. Melville, *Kew Bull.* 14: 277-79 (1960), rejected this treatment and, after critical studies of the pollination mechanism peculiar to Australian species, expressed the conviction that *Isotoma* is a distinct natural genus and should not be merged with *Laurentia*. The latter concept is accepted here.]

Plant *erect*, to 1 ft. high or more; leaves 3-8 cm. (1-3") long, deeply and irregularly *pinnatifid* with narrow lobes; pedicels 5-15 cm. (2-6") long; corolla-tube  $\pm$  2 cm. long; seeds finely *pitted* (widespread on rocky hills, particularly in clefts of granite):

**I. axillaris** Lindl. in *Edwards's bot. Reg.* 12: t. 964, col. (1826).

*Illust.*: Hart in Lindley (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 201 & 202, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 49, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 153 (1967); Brooks, *Aust. native Plants* t. inter 96 & 97 (1959); Reeves, *Wild Life (Melb.)* 3: 279 (1941); Anon., *Wild Life (Melb.)* 10: 155 (1948); Melville, *Kew Bull.* 14: 278 (1960)—reprod. struct.; Baillon, *Hist. Plant.* 8: 334 fig. 171 & 172 (1886)—flower.

*Vern.*: Rock Isotome. *Distr.*: GHLMRSVWZ—also N.S.W., Qd.

Plant *prostrate, creeping*; leaves <1 cm. long, *oblanceolate to orbicular*, only faintly *toothed*; pedicels to 2 cm. long (often much less); corolla-tube <1 cm. long (usually  $\pm$  5 mm.); seeds *smooth* (abundant in damp places, excepting Mallee districts):

**I. fluviatilis** (R. Br.) F. Muell. ex Benth. *Flor. aust.* 4: 136 (1868).

*Lobelia fluviatilis* R. Br. *Prodr. Flor. Nov. Holl.* 563 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 254, col. (1968); Fitch in Hooker f., *Flor. Tasm.* 1: t. 70, col. (1857), as *Lobelia fluviatilis*; Wimmer, *Pflanzenreich* IV 276 b (Heft 107): 402 fig. 74 d (1953), as *Laurentia fluviatilis*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 350 (1970).

*Vern.*: Swamp Isotome. *Distr.*: DEHJKMNPRSTVW—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[According to J. A. McComb's revision of *I. fluviatilis* in *Contr. N.S.W. Herb.* 4<sup>3</sup>: 109 (1970) the only representative occurring in Victoria is subsp. *australis* J. A. McComb (*l.c.*).]

#### HYPSELA C. Presl (1836)

**H. tridens** F. E. Wimmer in *Pflanzenreich* IV 276 b (Heft 106): 121, 122 fig. 31c (1943).

*Illust.*: Wimmer (*l.c.*).

*Distr.*: NV (rare and apparently endemic—Goulburn R. & Mitta Mitta R.).

#### Family GOODENIACEÆ

1. Flowers blue, purple, mauve or wholly white; petals *winged*, sometimes bearded or bristly inside; ovules 1-2 per ovary; fruit an inferior *indehiscent nut or drupe* (capsular in *Coopernookia* of E. Gippsland); seeds *not* flattened

Flowers basically *yellow* (occasionally also marked with purple, and rarely quite mauve in *Goodenia grandiflora*), sometimes whitish inside but then red or purplish externally; petals rarely bearded inside; ovules 2 or more in *each* of the 2 ovarian loculi; seeds *flat*, often bordered or winged

2. Petals *not* winged, *whitish* internally, *red or purplish* externally; fruit *indehiscent*, berry-like; leaves fleshy, entire,  $\pm$  spatulate (rhizomic & often matted perennial of saline marshes, chiefly coastal)  
*Selliera* (p. 641)
- Petals  $\pm$  winged, yellow; fruit capsular 3
3. Ovary *inferior*; sepals 5; neither corolla spurred nor bracteoles connate  
*Goodenia* (p. 635)
- Ovary *superior* (free within calyx), either sepals 3, corolla spurred or bracteoles large and broadly connate  
*Velleia* (p. 634)
4. Fruit capsular, obovoid-elliptic, 5-7 mm. long; seeds 2, ellipsoid, *strophiolate*, glossy, 4-5 mm. long; corolla blue to dull mauve, 11-14 mm. long, 2-lipped (3 equal anterior lobes, 2 shorter posterior ones), internally with whitish bristles ( $\pm$  1 mm. long) extending from margins into throat; leaves linear, 1-3 cm. long (glandular,  $\pm$  viscid undershrub to 3 ft. high, eastward from Buchan R. to Genoa R. & N.S.W. border)  
*Cooperhookia* (p. 641)
- Fruit *indehiscent*, nut-like or drupaceous; seeds *estrophiolate* 5
5. Corolla *fan-shaped*, the 5 lobes  $\pm$  equal and spreading in one plane,  $\pm$  *hirsute or bristly inside* (at least in throat); anthers *free*; fruit sometimes fleshy  
*Scævola* (p. 641)
- Corolla wholly blue or purple (rarely white),  $\pm$  2-lipped (the 2 smaller posterior lobes *connivent*, with infolded margins, at first enclosing the top of style in 2 cup-like auricles below each outer wing), *glabrous* inside but often densely hairy outside; anthers *cohering* around the style; fruit dry  
*Dampiera* (p. 644)

## VELLEIA Sm. (1798)

1. Leaves *entire* or nearly so, narrowly obovate to elliptic, to 3" long; peduncles <4" long, usually *much shorter* than foliage; sepals 3; corolla 7-10 mm. long; seeds *not* winged (rosetted perennial of damp places in alps and subalps, E. & N.E. from Bennison High Plains to N.S.W. border):

*V. montana* Hook. f. in Hook. *Lond. J. Bot.* 6: 265 (1847).

*Illust.*: Krause, *Pflanzenreich* IV 277 (Heft 54): 32 fig. 8 (1912); Fitch in Hooker f., *Flor. Tasm.* 1: t. 68 fig. B, col. (1857); Carolin, *Proc. Linn. Soc. N.S.W.* 92: 30 fig. 3 G, and t. 2 fig. J (1967)—corolla & seeds respect.

*Vern.*: Mountain Velleia. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

—Leaves variously *toothed*, 2-8" long; peduncles branched, >4" long, *much exceeding* foliage; sepals 5; corolla 10-20 mm. long; seeds *conspicuously winged* 2

2. Floral bracteoles large, leafy, *denticulate*, *connate*, *forming funnels* 1-2" diam., glabrous and often glaucous; corolla often with *purplish markings*, *not spurred*, glabrous outside but *pubescent inside* (annual rosetted herb with scapes to 3 ft. high, in northern Mallee, W. & N.W. from Piangil district):

**V. connata** F. Muell. in *Trans. phil. Soc. Vict.* 1: 18 (1855)—ut "*Velleia*".

*Illustr.*: Carolin, *Proc. Linn. Soc. N.S.W.* 92: 29 fig. 2 F, and t. 1 fig. G (1967)—corolla & seeds respect.; Mahood in Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2 pt. III: fig. 56 (1960); Mueller, *Key Syst. Vict. Plants* 2: fig. 95 (1886); Mueller, *Plants indig. Colon. Vict.* t. 49 (1864-65); Krause, *Pflanzenreich* IV 277 (Heft 54): 34 fig. 9 J & K (1912)—flower.

*Vern.*: Cup Velleia. *Distr.*: ABFG—also S.A., N.S.W., N. Terr., Cent. Aust.

—Floral bracteoles *free, deeply incised*,  $\pm$  hairy, green; corolla *wholly yellow*, with an anterior spur 3-7 mm. long, pubescent outside but *glabrous inside* (perennials with scapes rarely >1 ft. high) 3

3. Lobes of corolla manifestly *unequal*, the 3 inferior ones connate for 4-5 mm.; stigmatic indusium *broadly ovate* (when flattened out); wing around seeds to 1 mm. wide; plant often hairy (widespread from Mallee to Keilor Plains and alps of E. highlands):

**V. paradoxa** R. Br. *Prodr. Flor. Nov. Holl.* 580 (1810).

*Illustr.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 247, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 155 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1143 (1957); Carolin, *Proc. Linn. Soc. N.S.W.* 92: 30 fig. 3 A, and t. 2 fig. B (1967)—corolla & seeds respect.; Mahood in Chippendale, *Poison. Plants N. Terr.* Ext. Art. n. 2 pt. III: fig. 57 (1960); Krause, *Pflanzenreich* IV 277 (Heft 54): 36 fig. 10 A-C (1912); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 172 (1901); Burbidge, *Flor. Aust. Cap. Terr.* Fig. 352 (1970).

*Vern.*: Spur Velleia. *Distr.*: ACFHJKMNRSVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Lobes of corolla  $\pm$  *equal*, the 3 inferior ones connate for only 2-3-5 mm.; stigmatic indusium *narrowly oblong*; wing of seed  $\pm$  2 mm. wide; plant glabrous or nearly so (apparently restricted to Dimboola district and Hattah Lakes Nat. Park):

**V. arguta** R. Br. *Prodr. Flor. Nov. Holl.* 580 (1810).

*Illustr.*: Carolin, *Proc. Linn. Soc. N.S.W.* 92: 29 fig. 2 I, and t. 2 fig. C (1967)—corolla & seeds respect.

*Vern.*: Spur Velleia. *Distr.*: AC—also W.A., S.A., N.S.W.

### GOODENIA Sm. (1794)

1. Corolla *blotched with purple tints or wholly mauve*,  $\pm$  2 cm. long, *pilose* in throat; pedicels without bracteoles; leaves 2-3" long, long-petiolate,  $\pm$  *pinnate* with the terminal lobe large, ovate and boldly toothed (rare herbaceous perennial to 4 ft., on rocky slopes of Macalister, upper Snowy and Deddick R. valleys, the variety apparently endemic in Victoria):

**G. grandiflora** Sims in *Curtis's bot. Mag.* 23: t. 890, col. (1805)

var. *macmillanii* (F. Muell.) Krause in *Pflanzenreich* IV 277 (Heft 54): 75 (1912).

*G. macmillanii* F. Muell. *Fragm. Phyt. Aust.* 1: 119, t. 5 (1859).



*Illust.*: Mueller (*l.c.*); Mueller, *Key Syst. Vict. Plants* 2: fig. 94 (1886), as *G. Macmillani*.

*Vern.*: Pinnate Goodenia. *Distr.*: SWZ.

[The Victorian populations, formerly classed as a distinct species, differ from typical *G. grandiflora* (of N.S.W.) only in their *pinnate* foliage and *purplish* (not yellow) flowers.]

- Corolla *yellow or yellowish*; leaves *not pinnate* (but sometimes deeply lobed) 2
- 2. Plants *herbaceous*, the largest leaves often in a basal tuft or rosette 5  
Plants *shrubby*, with broad denticulate leaves along  $\pm$  woody stems;  
flowers *axillary*, in shortly pedunculate clusters of 2-7 (less commonly single) 3
- 3. Leaves oval, blunt,  $\pm$  *erect, sessile, stem-clasping*, 1-3 cm. long; flowers 1-3 per axil, *subsessile*; plant *pubescent* (Mt. Arapiles & Mallee tracts from Little Desert to Wyperfeld Nat. Park, also Whipstick Scrub near Bendigo):

*G. amplexans* F. Muell. in *Trans. phil. Inst. Vict.* 2: 70 (1858).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1139 D (1957).

*Vern.*: Clasping Goodenia. *Distr.*: BCM—also S.A., Tas.

- Leaves *spreading, petiolate, never stem-clasping*; flowers pedicellate; plant *glabrous*, often resinous-viscid 4
- 4. Plant 2-5 ft. high,  $\pm$  *erect*, faintly aromatic; leaves lanceolate to broadly ovate-cordate, thin-textured, finely and *closely toothed*, on slender petioles; peduncles often several-flowered; calyx-lobes subulate, >5 mm. long; capsule cylindrical, sometimes  $\pm$  moniliform, 8-14 mm. long (very widespread from coast to highlands):

*G. ovata* Sm. in *Trans. Linn. Soc. Lond.* 2: 347 (1794).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 381, col. (1968); King & Burns, *Wildflowers Tasm.* 61, col. (1969); Hösel, *Wildflowers S.-E. Aust.* 79, col. (1969); Black, *Flor. S. Aust.* ed. 2: fig. 1139 J (1957)—capsule; Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 174 (1901); Maiden & Campbell, *Flowering Plants & Ferns N.S.W.* pt. 7: t. 28, col. (1898); Baillon, *Hist. Plant.* 8: fig. 177-79 (1886); Andrews, *Bot. Repos.* 1: t. 68, col. (1799).

*Vern.*: Hóp Goodenia. *Distr.*: CDEHJKNPRSTVWZ—also S.A., Tas., N.S.W.

- Plant <2 ft. high, with *decumbent stems*; leaves broad but *tapered gradually* into petiole, *thick*, faintly and *irregularly toothed*; peduncles with 1-3 flowers; calyx-lobes 2-4 mm. long; capsule *ovoid to oblong*, 4-8 mm. long (Mallee country from Whipstick Scrub near Bendigo to far W. & far N.W.):

*G. varia* R. Br. *Prodr. Flor. Nov. Holl.* 576 (1810).

*Vern.*: Sticky Goodenia. *Distr.*: ABCFHM—also S.A., N.S.W.

- 5. Flowers  $\pm$  *sessile*, solitary (or a few clustered on short peduncles) in the axils of linear bracts, forming a *rigidly erect terminal spike*; corolla

*densely villous* outside with brownish hair, 14-16 mm. long (swampy near-coastal tracts of E. Gippsland, between Cann & Genoa Rivers):

*G. stelligera* R. Br. *Prodr. Flor. Nov. Holl.* 575 (1810).

*Illust.*: Maiden, *Ill. N.S.W. Plants* t. 3 (1907); Sulman, *Wild Flowers N.S.W.* 1: t. 14 fig. 1 (1913).

*Vern.*: Goodenia. *Distr.*: Z—also N.S.W.

—Flowers distinctly *pedicellate* ..... 6

6. Flowers on *slender peduncles*, solitary and axillary and/or on pedicels *many times longer* than the flowers, rows of ovules 2 per loculus 10  
Flowers in *leafless bracteate panicles*, the pedicels (above uppermost bracts) not or hardly longer than the flowers; rows of ovules >2 in each loculus of ovary (normal leaves always in *basal tufts*) 7
7. Panicles *hardly longer than leaves*, <4" long; leaves usually <2" long, narrowly oblanceolate, entire; corolla 10-12 mm. long, pubescent outside (dwarf rosetted perennial of marshy ground in southern districts from Lower Glenelg R. to Mallacoota, also Warby & Tolmie Ranges in N.E.):

*G. humilis* R. Br. *Prodr. Flor. Nov. Holl.* 575 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 61, col. (1968); Fitch in Hooker f., *Flor. Tasm.* 1: t. 68 fig. A, col. (1857); Lee, *Wild Life (Melb.)* 7: 278 (1945); Lee, *ibid.* 13: 354 (1950).

*Vern.*: Swamp Goodenia. *Distr.*: CDEHJMNPRTWXZ—also S.A., Tas., N.S.W.

—Panicles at least *twice as long as leaves*, usually 6-18" high 8

8. Calyx-lobes 4-7 mm. long, shortly glandular-hairy; corolla 15-25 mm. long, *orange-yellow* and *purple-striped* in lower half; indusium long-hairy,  $\pm$  3 mm. wide; leaves virtually glabrous, narrow-oblanceolate to  $\pm$  spatulate, mostly 2-4" long (apparently endemic in Victoria—from the Grampians to the Lower Glenelg R.):

*G. lineata* J. H. Willis in *Muelleria* 1<sup>3</sup>: 151 (1967).

*Vern.*: Grampians Goodenia. *Distr.*: DEJ.

—Calyx-lobes  $\pm$  2 mm. long; corolla  $\pm$  10 mm. long, *lemon-yellow*, *without purple lines*; indusium almost glabrous (except for short apical fringe), <2 mm. wide 9

9. Radical leaves *linear to linear-oblanceolate*, entire, quite glabrous (somewhat white-woolly between basal sheaths); sepals almost glabrous (chiefly of damp inundated ground, in open country of W., N.W. & N.):

*G. gracilis* R. Br. *Prodr. Flor. Nov. Holl.* 575 (1810).

*Illust.*: Loddiges, *Bot. Cabinet* 11: t. 1032 (1825).

*Vern.*: Goodenia. *Distr.*: ACGLMNR—also N.S.W., N. Terr.

—Radical leaves *obovate to oblanceolate*, irregularly *toothed* (sometimes obscurely), minutely *hairy to ± scabrid*; sepals manifestly *glandular-hairy* (near-coastal Gippsland, E. from Waratah Bay):

**G. paniculata** Sm. in *Trans. Linn. Soc. Lond.* 2: 348 (1794).

*Illust.*: Sulman, *Wild Flowers N.S.W.* 1: t. 14 fig. 2 (1913); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 176 (1901); Cavanilles, *Icon. & Descr. Plant.* 6: t. 507 (1801).

*Vern.*: Goodenia. *Distr.*: TWXZ—also N.S.W.

10. Pedicels without bracteoles (or bracteoles present only at very base) 15  
Pedicels with a pair of bracteoles at about the middle or a little lower 11
11. Leaves linear to narrowly oblanceolate, often broadly acute, entire or only slightly toothed; plants often rhizomic or stoloniferous, the stems (when present) ascending or decumbent 13  
Leaves (at least the larger) elliptical, obovate or ± orbicular, quite obtuse, always conspicuously toothed; plants usually with lateral, prostrate leafy stems (often rooting at the nodes) 12
12. Leaves with under-sides usually white with a dense cottony indumentum, but upper surfaces becoming glabrous; sepals linear, often acutish; corolla 10-14 mm. long (N.E. hills, also throughout alps E. & N.E. from Thomson R. to N.S.W. border):

**G. hederacea** Sm. in *Trans. Linn. Soc. Lond.* 2: 349 (1794).

*Illust.*: Ewart, *Flor. Vict.* fig. 337 (1931)—var. *alpestris*; Sulman, *Wild Flowers N.S.W.* 1: t. 13 fig. 2 (1913); Hamilton, *Proc. Linn. Soc. N.S.W.* 10<sup>1</sup>: t. 21 (1885)—flower parts.

*Vern.*: Ivy Goodenia. *Distr.*: MNRSVWZ—also N.S.W., A.C.T., Qd.

[Typical *G. hederacea* is apparently restricted in Victoria to drier Box-Ironbark forests in the Seymour, Graytown, Whroo, Barnawatha & Chiltern districts. The more abundant alpine population, distinguished by its almost rotund crenate-serrate leaf-blades (strikingly white beneath) to 1" wide and flower-peduncles to 2" long, is referable to var. *alpestris* Krause in *Pflanzenreich* IV 277 (Heft 54): 56 (1912).]

—Leaves thickish, green on both sides, but young leaves, stems and calyces often white-woolly; sepals oblong and very obtuse; corolla 15-22 mm. long (widespread in hilly districts of W., extending N.E. to Rutherglen and S.E. to Walhalla district):

**G. lanata** R. Br. *Prodr. Flor. Nov. Holl.* 577 (1810).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 399 (1963).

*Vern.*: Trailing Goodenia. *Distr.*: CDEHJKMNPRT—also Tas., N.S.W.

13. Plant with scattered simple hairs only; leaves green on both sides, the upper surfaces at last almost glabrous, peduncles 1-flowered, geniculate after anthesis, to 6" high, longer than foliage (widespread throughout W., extending N.E. to Warby Range and S.E. to Western Port):

*G. geniculata* R. Br. *Prodr. Flor. Nov. Holl.* 577 (1810).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 45, col. (1969); Bishop, *Wild Life (Melb.)* 2: 24 (Sept. 1940); Charsley, *Wild Flowers Melb.* t. 11 fig. 1, col. (1867).

*Vern.*: Bent Goodenia. *Distr.*: BCDEGJKMNPR—also S.A., Tas., N.S.W.

—Plants with a dense woolly indumentum (often white) of mixed simple and stellate hairs; leaves never glabrescent above nor the peduncles manifestly geniculate 14

14. Leaves relatively narrow (to 1 cm. wide), often  $\pm$  erect; peduncles slender, 1-flowered, not or hardly exceeding foliage; stem-leaves (if present) narrowed at base; corolla-wings 5-9 mm. long (Mallee sand-hills of Big Desert, Wyperfeld & Hattah Lakes Nat. Parks and far N.W. generally):

*G. sp.*—aff. *G. affinis* de Vriese in *Natuurk. Verh. holland. Maatsch. Wet.* 25 (10): 137 (1854).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 134, col. (1968), as *G. affinis*.

*Vern.*: Sand-hill Goodenia. *Distr.*: ABCF—also S.A., ?N.S.W.

—Leaves 1-3 cm. wide, rather flaccid; peduncles stout, usually several-flowered, 6-12" tall and much exceeding the foliage; stem-leaves broad and almost stem-clasping at base; corolla-wings  $\pm$  10 mm. long (Mallee tracts, from Little & Big Deserts to far N.W.):

*G. robusta* (Benth.) Krause in *Pflanzenreich IV* 277 (Heft 54): 53 (1912).

*G. geniculata* R. Br. var. *robusta* Benth. *Flor. aust.* 4: 63 (1868).

*Vern.*: Woolly Goodenia. *Distr.*: ABCH—also W.A., S.A.

15. Radical leaves conspicuously pinnatisect (seeds 4-5 mm. long) 19  
All the leaves entire or some slightly toothed 16

16. Radical leaves mostly  $\pm$  toothed, broadly oblanceolate to obovate or spatulate; stems elongated, lax, bearing distant leaves similar to but smaller than basal ones; corolla 15-22 mm. long, usually wholly glabrous outside (widespread through damp hilly districts of E., but very localized in W.—at Whipstick Scrub near Bendigo and Gram-pians):

*G. elongata* Labill. *Nov. Holl. Plant. Specim.* 1: 52, t. 75 (1805).

*Illust.*: Labillardière (l.c.).

*Vern.*: Lanky Goodenia. *Distr.*: DMNRSTVWZ—also Tas., N.S.W.

—Radical leaves entire (occasionally lobed at base), linear to lanceolate or oblanceolate; corolla appressedly silver-pubescent outside 17

17. Stems almost prostrate, the leaves and peduncles all in tufts which are connected by leafless stolons, the axils copiously white-woolly; corolla  $\pm$  10 mm. long; capsule obovoid; seeds  $\pm$  2 mm. long (scattered in W. & N.W. districts, usually on inundated flats or heavy-soiled "crab-hole" country):

*G. heteromera* F. Muell. *Fragm. Phyt. Aust.* 1: 115 (1859).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1139 A (1957).

*Vern.*: Spreading Goodenia. *Distr.*: ACHJMN—also S.A., N.S.W.

—Stems *erect or ascending* (if elongated, then leafy or bracteate), the axils *not* conspicuously woolly; corolla 15-25 mm. long 18

18. Leaves and stems *glabrous and ± glaucous*; style and indusium *silky-hairy*; capsule *globular*; seeds 3-3.5 mm. long, *narrowly winged* (widespread on heavier soils of Wimmera & Mallee, from Avoca R. to Little Desert & far N.W.):

*G. glauca* F. Muell. in *Trans. Vict. Inst.* 40 (1855).

*Vern.*: Pale Goodenia. *Distr.*: ACFGHJ—also W.A., S.A., N.S.W., N. Terr., Cent. Aust.

—Leaves, stems and calyces copiously sprinkled with appressed *shining silky hairs, never glaucous*; style and indusium quite *glabrous*; capsule *obovoid*; seeds 5-7 mm. long, *broadly white-winged* (confined to Mildura district in far N.W. and rare):

*G. subintegra* F. Muell. ex J. M. Black in *Trans. roy. Soc. S. Aust.* 51: 383 (1927).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 113, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1139 E-H (1957).

*Vern.*: Silky Goodenia. *Distr.*: A—also S.A., Cent. Aust., ? N.S.W.

19. Radical leaves 2-4" long, *erect*, usually with *acute* teeth or linear lobes; flowering stems *erect*, with one to several peduncles (2-6" long) arising from a group of long narrow bracts; corolla *glabrous*, 15-25 mm. long; seeds 6-22 (widespread in grassland and more open forest almost throughout State, but not in alps or subalps):

*G. pinnatifida* Schlechtendal in *Linnaea* 21: 450 (1848).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 113, col. (1965); Dietrich, *Flor. univ. new ser. t. 2* (1861); Burbidge, *Flor. Aust. Cap. Terr.* fig. 353 (1970).

*Vern.*: Cut-leaf Goodenia. *Distr.*: ABCDGHJKLMNPRSTVW—also W.A., S.A., N.S.W., A.C.T.

—Radical leaves normally <2" long, the lobes *obtuse*; flowering stems usually *spreading*, with small broad leaves or bracts; corolla *± pubescent* outside; seeds *± 6* 20

20. Plant *annual, almost glabrous* or with a few scattered hairs; stem-leaves *lobed*; peduncles 2-5 cm. long; sepals 2-3 mm. long, often *glabrous*; corolla 6-8 mm. long; seeds *blackish* (abundant on sandy soils of Wimmera & Mallee, with extension E. into Nathalia district):

*G. pusilliflora* F. Muell. *Key Syst. Vict. Plants* 1: 354 (1888).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 113, col. (1965); Krause, *Pflanzenreich* IV 277 (Heft 54): 87 fig. 16 K-M (1912).

*Vern.*: Small-flower Goodenia. *Distr.*: ABCFHM—also W.A., S.A., N.S.W.

[A form in the Kamarooka Forest, north of Bendigo, is distinctly hirsute on all parts (including the sepals).]

—Plant perennial, quite *pubescent*; stem-leaves *entire*; peduncles 1-2 cm. long, sepals 3-4 mm. long, *hairy*; corolla 10-15 mm. long; seeds *pale brown* (apparently very rare and restricted to heavier soils of Dimboola district):

*G. lunata* J. M. Black in *Trans. roy. Soc. S. Aust.* 51: 384 (1927).

*Vern.*: Goodenia. *Distr.*: C—also S.A.

[A revision of the genus *Goodenia* is currently being undertaken by R. C. Carolin (University of Sydney). Its publication will undoubtedly call for modifications in the nomenclature of some Victorian taxa.]

### SELLIERA Cav. (1799)

*S. radicans* Cav. in *An. Hist. nat. Madrid* 1: 41, t. 5 fig. 2 (1799), etiam *Icon. & Descr. Plant.* 5: 49, t. 474 fig. 2 (1799).

*Illust.*: Cavanilles (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 189, col. (1968); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 18, col. (1967); Curtis, *Student's Flor. Tasm.* 2: 402 (1963); Stones in *Curtis's bot. Mag.* 173: new ser. t. 395 A col., also fig. A-H (1962); Hamilton, *Proc. Linn. Soc. N.S.W.* 44: t. 29 inter 152 & 153 (1919); Lee, *Wild Life (Melb.)* 13: 349 (1951); Schönland in Krause, *Pflanzenreich* IV 277 (Heft 54): 113 fig. 22 (1912).

*Vern.*: Selliera (Swamp-weed, Remuremu—Maori name). *Distr.*: CDEJKNPTWZ—also S.A., Tas., N.S.W., N.Z.

### COOPERNOOKIA R. C. Carolin (1968)

*C. barbata* (R. Br.) R. C. Carolin in *Proc. Linn. Soc. N.S.W.* 92: 213 (1968). *Goodenia barbata* R. Br. *Prodr. Flor. Nov. Holl.* 576 (1810).

*Illust.*: Carolin, *Proc. Linn. Soc. N.S.W.* 92: 211 fig. 1 c, and t. 10 fig. b (1968)—corolla & seeds respect.

*Vern.*: Purple Goodenia. *Distr.*: WZ—also ?Tas., N.S.W.

### SCÆVOLA L. (1771)

1. Plant a woody,  $\pm$  hoary shrub 1-3 ft. high; leaves *clustered*, 1-2 cm. long, oblanceolate, each cluster often accompanied by a *simple or forked spine* shorter or longer than leaves; corolla 10-16 mm. long, *white*; drupe 5-7 mm. long (uncommon, in Mallee region W. & N.W. from Nyah district):

*S. spinescens* R. Br. *Prodr. Flor. Nov. Holl.* 586 (1810).

*Illust.*: Krause, *Pflanzenreich* IV 277 (Heft 54): 137 fig. 26 H-L (1912).

*Vern.*: Prickly Fan-flower (Poorntoo—S.A. aborig.). *Distr.*: ABFG—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Plant a herb or  $\pm$  wiry undershrub, never spiny 2

2. Branches stout, divaricate,  $\pm$  cane-like and pithy, angular, glabrous, leafless except for small recurved scales; flowers shortly bristly outside; sepals ovate,  $\pm$  2 mm. long, corolla pale mauve, villous inside, 20-25 mm. long; style almost glabrous, but indusium long-villous; capsule ellipsoid, 6-8 mm. long, somewhat tuberculate (very rare undershrub of Mallee sand-hills in Swan Hill district & Hattah Lakes Nat. Park):

*S. depauperata* R. Br. in Sturt Narrat. Exped. Cent. Aust. 2: App. 83 (1849).

Vern.: Skeleton Fan-flower. Distr.: AG—also W.A., S.A., N.S.W., Cent. Aust.

—Branches normally leafy, hairy (often hispid) 3

3. Leaves hispid, linear to narrow-lanceolate, 1-3" long, sessile, the almost entire margins  $\pm$  recurved; flowers violet, 2-3 cm. long, on slender peduncles 1-3" long; calyx-lobes narrow-linear, 4-8 mm. long (longer than tube); fruit dry, strongly ribbed, ellipsoid, bilocular, 5-6 mm. long (straggling ascending plant, to 2 ft. high, frequent in Gippsland—E. from Morwell to N.S.W. border):

*S. ramosissima* (Sm.) Krause in Pflanzenreich IV 277 (Heft 54): 141 (1912).

*Goodenia ramosissima* Sm. Specim. Bot. New Holl. 15, t. 5 (1793).

Illust.: Smith (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 475, col. (1968); Galbraith, *Wild Life (Melb.)* 3: 109 (1941); Sulman, *Wild Flowers N.S.W.* 1: t. 12 (1913); Cavanilles, *Icon. & Descr. Plant.* 6: t. 510 (1801), as *S. hispida*.

Vern.: Purple or Hairy Fan-flower. Distr.: STWXZ—also N.S.W., Qd.

—Leaves obovate-cuneate to spatulate,  $\pm$  petiolate, flat; flowers blue or white, on peduncles  $<1"$  long (shorter than leaves) or subsessile; calyx-lobes obsolete or minute ( $<1$  mm. long), much shorter than tube; fruit ribless 4

4. Plant entirely prostrate, rooting at nodes; leaves 1-3 cm. long; flowers shortly pedunculate, solitary in axils along length of stems; corolla 6-10 mm. long; fruit dryish,  $\pm$  3 mm. long (open damp heathy formations in alps, where frequent, also coastal between Wilsons Prom. & Cape Conran):

*S. hookeri* (de Vriese) F. Muell. ex Hook. f. *Flor. Tasm.* 1: 231 (1856), t. 67 (1857).

*Merkusia hookeri* de Vriese in Ned. kruidk. Arch. 2: 55 (1850).

Illust.: Fitch in Hooker f. (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 530, col. (1968); Leithhead, *Wild Life (Melb.)* 13: 465 (1951); Garnet, *Wildflowers Wilson's Prom.* fig. 768 (1971).

Vern.: Creeping Fan-flower. Distr.: RSTVZ—also Tas., N.S.W.

—Plant procumbent or ascending, but not rooting at nodes; flowers subsessile, in terminal interrupted leafy spikes 5

5. Leaves *entire* or nearly so, 1-3" long, broadly elliptic to oblanceolate or spatulate, thick in texture; corolla 15-20 mm. long; fruit *purplish, succulent, berry-like*,  $\pm$  5 mm. diam. (scattered on coastal sand-hummocks, where forming large mats, from Glenelg R. mouth to Gabo Id.):

*S. calendulacea* (Andr.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 644 (1917).

*Goodenia calendulacea* Andr. *Bot. Repos.* 1: t. 22, col. (1798).

*Illust.*: Andrews (*l.c.*); Jarman, *Aust. Plant Drawings* 87 & 88 (1930); Sulman, *Wild Flowers N.S.W.* 1: t. 13 fig. 1 (1913); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 178 (1901); Hamilton, *Proc. Linn. Soc. N.S.W.* ser. 2, 9<sup>a</sup>: t. 16 fig. 1-10 (1894)—flower parts; Garnet, *Wildflowers Wilson's Prom.* fig. 767 (1971).

*Vern.*: Dune Fan-flower. *Distr.*: ENTWZ—also S.A., Tas., N.S.W., Qd.

—Leaves prominently *toothed*, not thick; fruit *dry* 6

6. Stems *coarsely hispid*; lower leaves mostly 2-3" long; corolla lilac or bright blue with yellowish throat, 16-25 mm. long; indusium with a dense tuft of hairs (often purplish) rising from its base and equalling or exceeding it; ovary *bilocular*; fruit 3-4 mm. long (scattered from coast to mountain forests in E., and from Grampians through Mallee to far N.W.):

*S. æmula* R. Br. *Prodr. Flor. Nov. Holl.* 584 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 413, col. (1968); Brooks, *Aust. native Plants* t. opp. 113 (1959); Meredith, *Bush Friends Tasm.* t. 3 opp. 34, col. (1860), as *S. cuneiformis*.

*Vern.*: Fairy Fan-flower. *Distr.*: ABCDEFJSTZ—also W.A., S.A., Tas., N.S.W., Cent. Aust.

—Stems finely and *appressedly pubescent*; all leaves <2" (mostly <1") long; corolla pale bluish or white, <15 mm. long; ovary *unilocular*; fruit <3 mm. long (procumbent near-coastal plants) 7

7. Corolla 8-15 mm. long; style *hairy*; leaves *obovate-cuneate*, the lower 4-7 mm. broad (rare, in Portland district and E. Gippsland):

*S. albida* (Sm.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 644 (1917).

*Goodenia albida* Sm. in *Trans. Linn. Soc. Lond.* 2: 348 (1794);

*S. microcarpa* Cav. *Icon. & Descr. Plant.* 6: 6, t. 509 (1801).

*Illust.*: Cavanilles (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1139 o-P (1957); Curtis's *bot. Mag.* 8: t. 287, col. (1795), as *Goodenia lævigata*; Baillon, *Hist. Plant.* 8: fig. 188 & 189 (1886)—flower, as *S. microcarpa*; Loddiges, *Bot. Cabinet* 14: t. 1327 (1828), as *S. microcarpa*.

*Vern.*: Small-fruit Fan-flower. *Distr.*: EZ—also S.A., N.S.W., Qd.

[A population at Point Hicks (Cape Everard) is exceptional in having quite glabrous styles, as in *S. pallida* (*q.v.*).]

—Corolla 6-8 mm. long; style  $\pm$  *glabrous*; leaves *oblanceolate*, the lower <4 mm. broad (frequent in coastal tracts from Nelson to Cape Howe, also Grampians):



*S. pallida* R. Br. *Prodr. Flor. Nov. Holl.* 585 (1810).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 292, col. (1968); Garnet, *Wildflowers Wilson's Prom.* fig. 769 (1971).

*Vern.*: Coast or Smaller Fan-flower. *Distr.*: DEJKNPTWZ—also S.A., Tas., N.S.W.

### DAMPIERA R. Br. (1810)

1. Stems *striated or very slightly angular*; all leaves with a *white to greyish tomentum* on both or only the under surfaces; corolla invested on the outside with dark, greyish or occasionally whitish branched hairs 3  
Stems *strongly and sharply angular* or even flattened; older leaves *glabrous* or nearly so on both sides, usually with a few coarse teeth, 1-3 cm. long, 5-12 mm. broad 2
2. Flowers *axillary* along branches where either solitary or a few together on short common peduncles; floral leaves *glabrescent* beneath; corolla light blue to white, densely clothed outside with *shaggy ferruginous or yellow hairs*, the 3 longer inferior lobes connate for 5 mm.; branches *elongated* and mostly ascending, 10-18" long (frequent from coast to highlands in E., scattered in nearer W. on Brisbane, Lerderberg & Mt. Macedon Ranges):

*D. stricta* (Sm.) R. Br. *Prodr. Flor. Nov. Holl.* 589 (1810).

*Goodenia stricta* Sm. in *Trans. Linn. Soc. Lond.* 2: 349 (1794).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 393, col. (1968); Rosser, *Wildflowers Vict.* 83, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 46, col. (1969); Brough, *Proc. Linn. Soc. N.S.W.* 52: t. 36 (1927); Sulman, *Aust. Wildflowers* ser. 2: t. 54 (1913); Mort in Sulman, *Wild Flowers N.S.W.* 1: t. 15 fig. 1 (1913); Thompson, *Flowers of our Bush* t. 5 (1929); Garnet, *Wildflowers Wilson's Prom.* t., col. n. 763 opp. 31 (1971).

*Vern.*: Blue Dampiera. *Distr.*: CNPSTWXX—also Tas., N.S.W., Qd.

—Flowers congested in *dense terminal leafy-heads* (or some also axillary); floral leaves sprinkled beneath with a few *coarse dark stellate hairs*; corolla deep purplish blue, sparsely clothed outside with *appressed silvery or greyish hairs*, the 3 inferior lobes connate for only 3-3.5 mm.; branches *stocky, erect*, to 6" tall (restricted in Victoria to N.E. Nuniong Plateau region, E. Gippsland, where very localized):

*D. sp.*

*Distr.*: W—also N.S.W. (Kydra Peaks  $\pm$  20 miles S.E. of Cooma).

3. Leaves *flat*, ovate-elliptic to  $\pm$  orbicular, 1-3 cm. long, often shortly *petiolate*; flowers purple or blue, thickly covered with long dark woolly hairs (uncommon shrubby plant 2-3 ft. high, on rocky hills of E. Gippsland & far N.E.):

*D. purpurea* R. Br. *Prodr. Flor. Nov. Holl.* 588 (1810).

*D. brownii* F. Muell. *Fragm. Phyt. Aust.* 6: 29 (1867).

*Illust.*: Mort in Sulman, *Wild Flowers N.S.W. 1*: t. 15 fig. 2 (1913), as *D. brownii*.  
*Vern.*: Mountain Dampiera. *Distr.*: SVW—also N.S.W., Qd.

—Leaves  $\pm$  recurved or thickened at margins, quite sessile; indumentum on flowers often short and pallid (western plants <2 ft. high) 4

4. Flowers (solitary or cymose) loosely arranged on white-woolly peduncles much longer than the reduced branch-leaves; corolla enveloped in long plumose grey or blackish hairs (chiefly Big Desert & far N.W. Mallee, extending S.E. to St Arnaud):

*D. lanceolata* A. Cunn. ex DC. *Prodr.* 7: 503 (1839).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 184, col. (1968).

*Vern.*: Grooved Dampiera. *Distr.*: ABCDHJ—also S.A., N.S.W.

—Flowers usually solitary, on peduncles no longer than floral leaves; corolla densely but shortly tomentose outside 5

5. Leaves glabrous and often  $\pm$  shining on upper surface, linear-oblong to lanceolate, strongly revolute at margins; sepals inconspicuous or obsolete (N. Grampians to Little Desert, Big Desert & far N.W. Mallee, with an outlier in Whipstick Scrub near Bendigo):

*D. rosmarinifolia* Schlechtendal in *Linnæa* 20: 603 (1847).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 64, col. (1969); Black, *Flor. S. Aust.* ed. 2: fig. 1139 K-L (1957).

*Vern.*: Rosemary Dampiera. *Distr.*: ABCDHJM—also W.A., S.A., N.S.W.

[An etiolated form, having broader, less-revolute, toothed leaves and often pale or white flowers with dark indumentum on corolla, occurs along the southerly fringe of the species' range in Victoria; it has often been misidentified as "*D. lanceolata*".]

—Leaves greyish and finely stellate-tomentose on both surfaces, ovate to elliptic-oblong, 1-2 cm. long, flat but with thickened margins; sepals distinct, nearly as long as calyx-tube (more western Mallee, on sandhills from Little Desert to far N.W.):

*D. marifolia* Benth. *Flor. aust.* 4: 114 (1868).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 153, col. (1968).

*Vern.*: Velvet Dampiera. *Distr.*: ABCF—also S.A., N.S.W.

### Family BRUNONIACEÆ

BRUNONIA Sm. ex R. Br. (1810)

*B. australis* Sm. ex R. Br. *Prodr. Flor. Nov. Holl.* 590 (1810).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 41, col. (1969); Rosser, *Wildflowers Vict.* 15, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 152 (1967); Barrett, *Aust. Wildflower Book frontis.*, col. (1942); Bishop, *Wild Life (Melb.)* 2: 25 (Sept.

1940); Pescott, *Native Flowers Vict.* t. opp. 85 (1914); Black, *Flor. S. Aust.* ed. 2: fig. 1145 (1957); Krause, *Pflanzenreich* IV 277a (Heft 54): 4 fig. 1 (1912); Garnet, *Wildflowers Wilson's Prom.* t., n. 771 opp. 142 (1971).  
*Vern.*: Blue Pincushion. *Distr.*: CDEGHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust.

### Family STYLIDIACEÆ

Column *irritable*; labellum *immobile*, minute ( $< \frac{1}{2}$  the length of other 4 corolla-lobes), quite *free from column* and usually deflexing; plants perennial or ephemeral *Stylidium* (p. 646)

Column *immobile*; labellum  $\pm$  *irritable*, *conspicuous* ( $\pm \frac{1}{2}$  the length of other corolla-lobes), *bifid at summit*, *hooded and enclosing the erect column* until anthesis; plants always ephemeral (to 2" high) *Levenhookia* (p. 649)

### STYLIDIUM Swartz in Willd. (1805)

1. Plants weak, *ephemeral* on damp ground, 1-4" tall; leaves *few* ( $< 10$ ), radical or scattered along stem,  $< 8$  mm. long 5  
 Plants *perennial*,  $> 4$ " tall (when flowering); leaves *very numerous*,  $> 10$  mm. long (often  $> 20$  mm.) 2
2. Leaves 2-4 cm. long, *never rosetted*, widely spreading and  $\pm$  *crowded along the branches*; flowering scapes 6-18" long, on plants 1-5 ft. tall; calyx-lobes *free*; corolla pink, the petals  $\pm$  equal and throat *bare*; capsules  $\pm$  oblong, 10-12 mm. long (very localized in Victoria at and near Wingan Inlet, E. Gippsland):

*S. laricifolium* L. C. Rich. in Pers. *Synops. Plant.* 2: 210 (1807).

*Illust.*: Wakefield, *Vict. Nat.* 79: 322 (1963); Forster in Harris, *Wild Flowers Aust.* t. 48, col. (1947); Sulman, *Aust. Wild Flowers* ser. 2: t. 30 (1913); Sulman, *Wild Flowers N.S.W.* 1: t. 17 fig. 2 (1913); Mildbraed, *Pflanzenreich* IV 278 (Heft 35): 47 fig. 14 G-J (1908)—flower; Swan in Hooker, *Exot. Flor.* 1: t. 32 (1823).

*Vern.*: Giant Trigger-plant. *Distr.*: Z—also N.S.W., Qd.

—Leaves in *basal rosettes or tufts*; capsules mostly  $< 10$  mm. long or corolla with throat-appendages 3

3. Flowers few, in a *loose corymb* or corymbose panicle; calyx-lobes equal, *free*; corolla pale pink or white inside but *red outside*, the throat *bare* and with yellow glandular spots; leaves *narrowly oblanceolate*, often *tipped with a long hair*, closely packed and *incurved* so as to form a *hemispherical basin* (endemic in Grampians, favouring damp stony places and mossy ledges of sandstone rock):

*S. soboliferum* F. Muell. in Hook. *J. Bot. & Kew Gdns Misc.* 8: 162 (1856).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 112, col. (1968); Reeves, *Wild Life (Melb.)* 5: 60 (1943); Mueller, *Plants indig. Colon. Vict.* t. 47 (1864-65).

*Vern.*: Grampians Trigger-plant. *Distr.*: DJ.

—Flowers in *erect racemes* (often spike-like), wholly *pale pink to deep magenta*; calyx *2-lipped*, 2 of the lobes *united almost to apex*; corolla-throat with 6 or 8 *prominent appendages*; leaves *narrow-linear*, not or only slightly incurved, *never hair-pointed* 4

4. Leaves usually 2-12" long; flowers *sessile*; bract *much exceeding* the extremely short pedicel; calyx-tube *narrowly ovoid*; throat-appendages of corolla 6, equal, up to half the length of petals, *papillate-glandular* (very widespread except on drier plains and in far N.W. Mallee, from coast to alps):

*S. graminifolium* Swartz in Willd. *Spec. Plant.* 4: 146 (1805).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 490, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 157 (1967); Erickson, *Trigger plants* 168 t. 50 fig. 1-10 (1958), also *Aust. Plants* 1<sup>o</sup>: 17 (1961); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 12, col. (1962); Ewart, *Flor. Vict.* fig. 338 (1931); Curtis's *bot. Mag.* 44: t. 1918, col. (1817); Sulman, *Wild Flowers N.S.W.* 1: t. 16 (1913); Mildbraed, *Pflanzenreich* IV 278 (Heft 35): 2 fig. 1 A-C (1908); Garnet, *Wildflowers Wilson's Prom.* t., n. 773 opp. 95 (1971); Burbidge, *Flor. Aust. Cap. Terr.* fig. 354 (1970); Morcombe, *Aust. Wildflowers* tt. on [20, 22 & 24]; col. (1970).

*Vern.*: Grass Trigger-plant. *Distr.*: BCDEJKMNPSTVWZ—also S.A., Tas., N.S.W., A.C.T.; Qd.

[This species varies greatly in leaf dimensions, also in size and colour of flowers. The var. *angustifolium* Mildbraed in *Pflanzenreich* IV 278 (Heft 35): 73 (1908), with very narrowly linear leaves (6-12" long but only 2 mm. wide), is not uncommon in the Dandenong Ranges and other cooler montane parts of the State.]

—Leaves mostly <2" long; flowers *distinctly pedicellate*; bract *barely as long* as pedicel; calyx-tube *subcylindric*; throat-appendages of corolla usually 8 (4 longer than others), yellow-tipped but *non-glandular* (apparently restricted in Victoria to fringes of subalpine marsh on the Dargo High Plains, also Rocky Plain near the Wombargo Range in E. Gippsland):

*S. graminifolium* Swartz [see preceding]

[This interesting subalpine population seems to have all the morphological features ascribed to *S. lineare* Swartz in Willd. *Spec. Plant.* 4: 146 (1805), and it was initially regarded as an extension of that species southward into Victoria. Further intensive studies, however, have shown it to be linked in the field with typical tall, long-leaved, ± sessile-flowered *S. graminifolium* by such a complete gradation of forms that the recognition of two local species is quite unrealistic.]

5. Calyx-tube *linear*, *glabrous* or nearly so, *much longer* than lobes of which 2 are *united* almost to their tips; stigma *low*, *cushion-like*, hairy all over 7  
Calyx-tube *globular*, ± *glandular-hairy*, *slightly shorter* than the 5 free lobes; stigma *projecting* from between anthers, *strap- or fan-like* with an *apical brush* of hairs 6

6. Flowers *minute* (<5 mm. across), usually single on a fine, capillary, dark-coloured scape; corolla white, *spurless*, with *bare throat*; stigma *fan-shaped* (damp near-coastal heaths from Lower Glenelg R. to Western Port, also Grampians):

*S. perpusillum* Hook. f. in Hook. *Lond. J. Bot.* 6: 266 (1847).

*Illustr.*: Erickson, *Triggerplants* t. 7 (opp. 42) fig. 1 *col.*, also 44 t. 8 fig. 11-17 (1958); Mildbraed, *Pflanzenreich* IV 278 (Heft 35): 32 fig. 11 J (1908).

*Vern.*: Slender Trigger-plant. *Distr.*: CDEJMP—also W.A., S.A., Tas.

—Flowers 10-15 mm. across, 1-9 per scape; corolla white or pink, often with a red spot at base of each upright (and often apically lobed) petal, the tube usually produced into a horizontal *nectary-spur longer than sepals*, the throat sometimes with 2 linear appendages at base of upright petals (scattered through far W. from Portland district to Grampians, Little & Big Deserts, northern slopes of Warby Range at Killawarra, Violet Town & Warrenbayne Forest in N.E., also near Gembrook):

*S. calcaratum* R. Br. *Prodr. Flor. Nov. Holl.* 570 (1910).

*Illustr.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 121, *col.* (1968); Erickson, *Triggerplants* t. 7 (opp. 42) fig. 2-3 *col.*, also 44 t. 8 fig. 3, 4, 6, 7, 10 (1958); Carlquist, *Aliso* 7<sup>1</sup>: 17 fig. 5-6, 23 fig. 7 (1969); Mildbraed, *Pflanzenreich* IV 278 (Heft 35): 32 fig. 11 A-H (1908); Engler & Drude, *Vegetation Erde* 7: 256 (1906).

*Vern.*: Book Trigger-plant (Spurred Trigger-plant). *Distr.*: CDEMRS—also W.A., S.A.

[N.E. Victorian populations, and some from the Little Desert, are referable to the var. *ecorne* F. Muell. ex Erickson & Willis in *Vict. Nat.* 72: 133 (1956), differing only in the poor development of its nectary-spur which is either extremely short or lacking altogether. Because of this feature, the variety has been confused in the past with *S. perpusillum*—a much more slender, smaller-flowered plant.]

7. Corolla 1.5-3.0 mm. across,  $\pm$  *fan-shaped*, the posterior pair of petals almost *twice as long* as the anterior pair which flank them, pale pink with *deep rose stripe* along outer side of each lobe, the throat with 6 minute humps or rudimentary appendages; leaves all radical, 3-5 mm. long (moist heaths and shallow seasonal swamps of S.W. from Port Campbell to Lower Glenelg R., Grampians & Mt. Arapiles, also far E. Gippsland at Howe Ck near Mallacoota Inlet):

*S. beagleholei* J. H. Willis in *Muelleria* 1<sup>3</sup>: 153 (1967).

*Illustr.*: Carlquist, *Aliso* 7<sup>1</sup>: 23 fig. 11 (1969).

*Vern.*: Beaglehole's Trigger-plant. *Distr.*: CDEJKZ—also S.A., W.A.

—Corolla 3-4 mm. across, *never fan-shaped*, the petals oriented *in opposing pairs*, white or very pale pink and *without external stripes*, the throat *bare*; leaves radical or scattered

8. Petals *unequal, paired laterally*, the larger (anterior) of each pair *slightly curved* towards the smaller one; leaves *often rosetted* (widespread in W., S.W. & far E., extending to Shepparton and Pine Mountain in N.E.):

*S. inundatum* R. Br. *Prodr. Flor. Nov. Holl.* 571 (1810).

*S. brachyphyllum* Sond. in *Lehm. Plant. Preiss* 1: 386 (1845).

*Illust.*: Carlquist, *Aliso* 7<sup>1</sup>: 23 fig. 9 (1969); Erickson, *Triggerplants* t. 7 (opp. 42) fig. 8 *col.*, also 55 t. 11 fig. 1-7 (1958), as *S. brachyphyllum*.

*Vern.*: Hundreds and Thousands. *Distr.*: CDEJMNVPZ—also W.A., S.A., Tas., N.S.W., ?A.C.T.

—Petals *almost equal, paired vertically*, not curved; leaves scattered or sometimes gathered towards base, but *not* rosetted (widespread on damp ground through lowland areas, except in N.W. Mallee, also on lower ranges):

*S. despectum* R. Br. *Prodr. Flor. Nov. Holl.* 571 (1810).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1147 (1957); Erickson, *Triggerplants* t. 7 (opp. 42) fig. 9 *col.*, also 55 t. 11 fig. 12-20 (1958); Carlquist, *Aliso* 7<sup>1</sup>: 23 fig. 10 (1969); Garnet, *Wildflowers Wilson's Prom.* fig. 772 (1971).

*Vern.*: Small Trigger-plant. *Distr.*: CDEHJMNPRTZ—also W.A., S.A., Tas., N.S.W.

#### LEVENHOOKIA R. Br. (1810)

Plant with *reddish* stems and lower foliage; leaves obovate to orbicular, 3-5 mm. long; labellum *whitish*, as in the other 4 petals; calyx & capsule globose (abundant almost throughout State, excepting far N.W. and higher mountains):

*L. dubia* Sond. in *Lehm. Plant. Preiss.* 1: 392 (1845).

*Illust.*: Erickson, *Triggerplants* t. 57 (opp. 200) fig. 5 *col.*, also 212 t. 59 fig. 6-10 (1958); Black, *Flor. S. Aust.* ed. 2: fig. 1146 E-F (1957); Mueller, *Key Syst. Vict. Plants* 2: fig. 93 (1886); Mueller, *Plants indig. Colon. Vict.* t. 48 (1864-65), as *L. creberrima*; Schönland in Engler & Prantl, *Natürl. PflFam.* IV 5: 83 fig. 52 A & C (1889).

*Vern.*: Hairy Stylewort. *Distr.*: BCDHJKNMPRW—also W.A., S.A., Tas., N.S.W.

Plant *green* throughout; leaves round, very glandular; labellum *deep purple*, contrasting with other white or pinkish petals; calyx & capsule globose, very glandular-hairy as in *L. dubia* (apparently endemic and scattered across W. districts from Little Desert and Lower Glenelg R. to Eltham and Bendigo areas, with a N.E. extension to Rushworth):

*L. sonderi* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 1: 18 (1858).

*Coleostylis sonderi* F. Muell. in *Trans. phil. Soc. Vict.* 1: 46 (1855).

*Vern.*: Slender Stylewort. *Distr.*: CDEJMN—also ? S.A.

## Family COMPOSITÆ [Asteraceæ]

1. Heads  $\pm$  *similar* (even if unisexual), the females *never* producing burrs which fall away intact [bracts and achenes may be variously appendaged with spines, but, if so, they break apart at maturity] 3  
 Heads of male flowers in terminal clusters or racemes; female heads in the lower axils, *very dissimilar*, enveloped in fused bracts which form *hard spiny burrs* at maturity (rays and pappus absent) 2
2. Male heads with *fused bracts*, in a leafless terminal *raceme*; female heads 1-flowered, with involucre of *short*, straight or slightly curved prickles (W., N.W., N. & N.E.; 1-3 ft.; leaves dissected) 2  
*Ambrosia* (p. 735)  
 Male heads with *free bracts*, in a short terminal *cluster*; female heads 2-flowered, at length with an involucre of *long* curved hooks or spines 2  
*Xanthium* (p. 735)
3. Tree of mountain forests; leaves 3-6" long, entire, white-woolly beneath; heads yellow, rayless, with bracts 1-seriate, in dense axillary panicles 3  
*Bedfordia* (p. 756)  
 Not as above 4
4. Involucral bracts *quite unarmed* (but sometimes with rigidly fimbriate margins), and the leaves rarely prickly (only in some species of *Lactuca* and *Sonchus*) 14  
 Involucral bracts (and often the foliage) with *sharp spines or prickles* 5
5. Bracts and leaves *both spiny* 6  
 Bracts tipped with *straight* spines (often pectinate with small lateral prickles as well); leaves never ovate or very broad, often lobed, *without prickles* 6  
*Centaurea* (p. 763)  
 Bracts very numerous, stiff, narrow-linear, with *hooked* apices, forming burr-like heads; florets, purple; leaves entire, often white beneath, ovate (to 1 ft. broad), *without prickles* (W. basalt tracts, also W. & S. Gippsland; biennial weed, 2-4 ft. high) 6  
*Arctium* (p. 759)
6. Florets *all ligulate* and bisexual, yellow (biennial thistle 2-3 ft. high, in nearer N.W.) 7  
*Scolymus* (p. 767)  
 Florets *all tubular* 7
7. Leaves passing gradually into the bracts, both with *revolute margins*; pappus a *small crown* of minute fused scales; achenes 10-ribbed; florets yellow; thistle-like perennial 1-3 ft. high (Port Melbourne & Bacchus Marsh) 7  
*Berkheya* (p. 758)  
 Leaves and bracts with *flat or incurved margins*; pappus *never* entirely coronate; achenes either smooth and  $\pm$  compressed, 4-angled or (rarely) >10-ribbed 8
8. Florets *purple or pink* (rarely white); achene with *straight*, *basal* insertion 10  
 Florets *yellow*; achene with an *oblique*, *lateral* insertion 9
9. Achene *obovoid*, pale,  $\pm$  4-angled; pappus a single series of scales of varying length (leaves often narrow, with bold terminal and lateral spines) 9  
*Carthamus* (p. 766)  
 Achene  $\pm$  *cylindrical*, yellow-brown and lustrous, *many-ribbed*; pappus 9

of 3 series—a short toothed incurved corona, 10 long awns and 10 much shorter inner bristles (leaves and bracts broad)

- \**Cnicus* (p. 767)
10. Whole plant *white-cottony*; heads <2" wide; receptacle pitted, but without bristles between florets \**Onopordon* (p. 762)  
 Plant *not* wholly white and cottony or, if so, the heads >2" wide; receptacle beset with bristles 11
11. Heads <2" wide; bracts *never fleshy* at base, <5 mm. wide 13  
 Heads large, 2" wide or more, the broad bracts  $\pm$  *fleshy* at base where 5-10 mm. wide 12
12. Leaves almost *glabrous*, shallow-lobed, *variegated* with white along veins; bracts *prickly on margins*; florets *reddish-purple*; staminal filaments *united*; pappus-hairs *not plumose* \**Silybum* (p. 762)  
 Leaves *cottony-hairy*, deeply lobed, *not variegated*, 1-2 ft. long; bracts lacking marginal spines; florets *blue*; staminal filaments *free*; pappus-hairs *plumose* (mainly on basalt near Melbourne) \**Cynara* (p. 759)
13. Stems with *spiny wings* (often interrupted) from the decurrent leaf-bases; pappus of *simple hairs* \**Carduus* (p. 761)  
 Stems *without* spiny wings; pappus of *plumose hairs* (heads sometimes unisexual) \**Cirsium* (p. 760)
14. Florets *all ligulate* (forming a flattened ray); plants usually *exuding a milky juice* if broken [Tribe *Cichorieæ*] 95  
 Florets both *ligulate and tubular*, or all *tubular*; plants *without latex* 15
15. Leaves entirely *alternate or radical* (rarely absent) 26  
 Leaves *predominantly opposite* (those of the upper flowering parts sometimes alternate) 16
16. Some or many *ligulate* florets present, with rays slightly or much exceeding the involucre; florets subtended by *conspicuous scales* (except in *Tagetes*) 20  
 Florets *all tubular*, *not* subtended by scales 17
17. Head *ovoid or globular, compounded* of many 2- to 3-flowered partial heads (leaves narrow-linear, entire) \**Calocephalus* (p. 731)  
 Heads *simple*, but sometimes clustered 18
18. Pappus *absent*; achene ribless; heads small, axillary, nodding, the fused bracts forming a cup (procumbent, entire-leaved pubescent perennial of Newstead & Kerang districts) \**Iva* (p. 734)  
 Pappus of 6-12 obovate *notched scales*; achene ribless, curved, papillose (minute annual with clustered whitish heads) \**Rutidosis* (p. 723)  
 Pappus of 2-4 sharp, stout, retrorsely *barbed awns* arising from ribs on the achenes; heads large, terminal, solitary, with yellow florets (stout glabrous annual 1-2 ft. high with deeply trilobed leaves, in Gippsland and far N.E.) \**Bidens* (p. 737)
- Pappus of several *bristles*; achenes ribbed or angled; heads small, loose, in panicles 19
19. Heads *few*, in loose panicles; achene glandular at first, 3- to 5-angled, with as many clavate pappus-bristles which are much shorter than corolla \**Adenostemma* (p. 661)  
 Heads *numerous*, in corymbose panicles; achene 6- to 10-ribbed, with



several slender barbellate pappus-bristles as long as corolla

\**Eupatorium* (p. 662)

20. Leaves *deeply dissected* or pinnate, with serrated segments *strongly aromatic*; heads cylindrical, with glabrous *fused* bracts, often numerous in dense compound corymbs (glabrous annual 3-6 ft. tall, in Gippsland & Goulburn Valley) \**Tagetes* (p. 738)  
 Leaves simple, *entire or toothed, not aromatic*; involucre bracts *free, usually  $\pm$  hairy* 21
21. Leaves *broad* and  $\pm$  toothed; inflorescence *never glandular*; pappus of 2-several awns or scales 25  
 Leaves *entire* and linear-lanceolate or, if  $\pm$  broad and toothed, then inflorescence *very glandular*; pappus *absent or reduced* to a minute corona 22
22. Heads *without glandular hairs*, either small ( $\pm$  5 mm.) and axillary or large ( $>10$  mm.) and solitary at ends of branches 24  
 Heads *glandular*, medium-sized (5-10 mm. long); in loose leafy panicles 23
23. Leaves *entire*; peduncles about *as long as heads*; bracts  $\pm$  similar; achenes compressed but *hardly angular* (glandular-hairy viscid annual 1-2 ft. high, in Kyneton, Maldon & N. E. districts) \**Madia* (p. 738)  
 Leaves  $\pm$  *toothed* (often boldly); peduncles slender, *longer than heads*; bracts of 2 kinds (outer  $\pm$  5, spreading oblanceolate; inner  $\pm$  8, broad, incurved, boat-shaped); achenes curved and *strongly angled* (hairy annual of shaded places, 1-3 ft. high) \**Sigesbeckia* (p. 736)
24. Heads *large, terminal*; ray conspicuous, *much exceeding* involucre; florets *numerous*; achenes broadly *turbinate* 3- to 4-angled (stiffly erect perennial herb 1-2 ft. high, in Melbourne, Geelong & Bannockburn areas) \**Wedelia* (p. 737)  
 Heads *small, on axillary peduncles*; ray *barely exceeding* involucre; florets *few*; achenes *cylindrical* (weak procumbent herb of damp open places in W., N.W., N. & Cent. districts) \**Eclipta* (p. 737)
25. Ray *long, bright yellow*; leaves and stems *scabrid-hairy*; pappus of 2 short awns or bristles (at length deciduous); achene *very compressed*, with 2 broad *pale wings* extending well above apex and obscuring the awns (large-headed annual of N.W. Mallee) \**Verbesina* (p. 737)  
 As for the last, but achenes *plump and wingless* \**Helianthus* (p. 738)  
 Ray *very short, whitish*; leaves and stems  $\pm$  *glabrous*; disk florets with pappus of several narrow flat *ciliate scales* (slender weak annual of S. districts, chiefly coastal) \**Galinsoga* (p. 738)
26. Head *without obvious ray* (but marginal florets may have minute ligules not projecting far beyond involucre, and the bracts themselves may have radiating laminae) 51  
 Head *with a ray* of 1-many ligulate florets (spreading at least well beyond the involucre—"daisy flowers") 27
27. Pappus *absent* 41  
 Pappus *present* (of bristles, awns or scales) 28
28. Involucral bracts in a *single row,  $\pm$  coherent* at anthesis, almost entirely

- herbaceous (a few small outer ones around their base); disk florets yellow; pappus of capillary bristles *Senecio* (p. 747)  
 Involucral bracts in 2-several series, free, sometimes scarious on margins 29
29. Bracts with *entirely scarious* and hyaline laminæ, at least the inner with *distinct claws* (ligulate florets deeply 2- to 4-toothed; anther cells *long-tailed* at the base) *Podolepis* (p. 726)  
 Bracts neither wholly scarious *nor* clawed (anthers without tails, except in *Inula*) 30
30. Disk florets *yellow or whitish*, pappus of capillary bristles or awns 32  
 Disk florets *violet to blackish*, never yellow; pappus of small *obtusate scales* (inner bracts with broad obtuse membranous tips) 31
31. Ligulate florets *neuter*; achenes *woolly, not ribbed* (mostly *annual*) *Arctotheca* (p. 758)  
 Ligulate florets *female*; achenes *silky, 3-ribbed* on back (procumbent *whitish perennial*, on Port Phillip coasts) *Arctotis* (p. 757)
32. Ray white, pink, mauve, blue or purple [*yellow only* in one form of *Brachycome heterodonta*, having a minute pappus and flattened achenes with wide scalloped wings] 36  
 Ray *yellow* (or yellow-and-red) 33
33. Leaves *simple*, entire or toothed; heads usually >6 mm. wide; bracts *numerous*, in several rows 35  
 Leaves *pinnate*, with linear to filiform segments; heads small and narrow (<6 mm. wide); bracts *few*, in 1-2 rows 34
34. Involucral bracts *narrow to apex*; ray florets several; pappus of 2 erect or divergent, conspicuous *barbellate awns*; receptacle with *chaffy scales* (perennial herb to 2 ft. high, at Suggan Buggan) *Glossogyne* (p. 737)  
 Involucral bracts *dilated above*, with broad obtuse hyaline apices; ray floret *solitary*; pappus of several *broad scales*; receptacle *naked* (small erect asperous annual herb of Kerang & Tongala districts) *Schkuhria* (p. 739)
35. Plant *sticky, aromatic*; heads <1 cm. wide, in a loose leafy pyramidal *panicle*; rays *minute*; pappus of *capillary bristles* *Inula* (p. 728)  
 As for the last, but heads >1 cm. wide in a leafy *corymb* and rays *medium-sized* *Grindelia* (p. 698)  
 Plant *not sticky*; rays *short*, <6 mm. long; pappus of 2 to several stout *barbed awns* *Calotis* (p. 677)  
 Plant *not sticky*; rays very *long and spectacular*; pappus of *broad scales* with awn-like points (garden escape) *Gaillardia* (p. 739)
36. Pappus of 2 or more rigid barbed awns or spines, the whole head becoming *burr-like* at maturity *Calotis* (p. 677)  
 Pappus *reduced*, much shorter than body of achene, consisting of several *short hairs or bristles* (often  $\pm$  stelliform) *Brachycome* (p. 663)  
 Pappus *conspicuous*, longer than achene, of *numerous capillary bristles* 37
37. Scapes tall (>6") stout, with large *solitary terminal head*; leaves *radical*

rather large, lanceolate to linear, *silver-hairy* (at least on under-surfaces); ray florets in 1 row (perennial alpine herbs)

*Celmisia* (p. 684)

Scapes or branches several- to many-headed or, if 1-headed, then leaves not at once radical and silvery (often shrubs or semi-shrubs) 38

38. Pappus bristles of disk florets *fewer* than those of ray florets, and interspersed with several or numerous, much shorter *scale-like bristles* (bracts and ray florets in 2 or more rows) *Minuria* (p. 676)

Pappus bristles of all florets *uniform and capillary* 39

39. Achenes and pappus *accrescent*, the latter far exceeding the involucre as fruit matures (achenes pubescent, striated with about 6 ribs on each face); tip of style-arm *subulate*; rays blue *Vittadinia* (p. 682)

Achenes and pappus *not accrescent*; tip of style-arm *lanceolate to triangular* 40

40. Shrubs (rarely trees); ray florets in 1 row; pappus bristles in 2 to several rows *Olearia* (p. 685)

Herbs (almost glabrous annual, or renascent perennial); flower-heads *very numerous* in long panicles; ray florets in 1-2 rows (rarely 3); pappus-bristles in 2-3 rows (weeds or garden escape)

*\*Aster* (p. 680)

Herbs (perennial and often alpine); flower heads *solitary* on a long peduncle; ray florets in 2-several rows; pappus-bristles in 1 row

*Erigeron* (p. 680)

41. Rays *yellow* 46

Rays white, mauve or blue (sometimes reddish externally) 42

42. Bracts entirely *green and herbaceous*; head solitary, on naked  $\pm$  hairy peduncle; leaves all radical, obovate-spathulate, slightly toothed; achene compressed, *beakless* *\*Bellis* (p. 663)

Bracts with narrow *scarious margins*; head and foliage as for the last, but achenes *contracted into an apical beak* *Lagenophora* (p. 662)

Bracts with scarious margins; achenes *not beaked* 43

43. Receptacle *naked* 45

Receptacle bearing *chaffy scales*; bracts broadly hyaline-scarious above (foliage deeply dissected, usually aromatic) 44

44. Heads <10 mm. wide, crowded in *terminal corymbs*; rays pink or white; achenes strongly compressed *\*Achillea* (p. 740)

Heads >10 mm. wide, *solitary* at end of branches, often long-pedunculate; achenes hardly compressed, *glabrous*

*\*Anthemis* (p. 739)

As for the last, but achenes *densely woolly* *\*Lasiospermum* (p. 747)

45. Bracts *broadly scarious* and obtuse above, or the heads >3 cm. wide (achenes with several *prominent ribs*) *\*Chrysanthemum* (p. 740)

Bracts with *narrowly scarious* margins; heads <3 cm. wide (small plants with inodorous leaves and *ribless* achenes) *Brachycome* (p. 663)

46. Ray florets *short*, barely exceeding involucre, yellow-and-brown, developing large achenes ( $\pm$  10 mm. long) with 3 *broad hyaline wings* (leafy annual of far N.W. Mallee) *\*Osteospermum* (p. 757)

Ray florets *conspicuous*; achenes *never* 3-winged 47

47. Erect branched annuals or woody perennials; leaves never white-woolly beneath 49  
Stemless or prostrate herbaceous perennials with leaves white-woolly beneath (often pinnate-lobed) and heads solitary; achenes 3- to 5-ribbed 48
48. Stemless or almost so; leaves radical; peduncles shorter than leaves; disk florets yellow *Cymbonotus* (p. 758)  
Stems extensively creeping and rooting at nodes; peduncles as long as or exceeding the foliage; disk florets black \**Arctotheca* (p. 758)
49. Shrub >2 ft. high; heads corymbose; achenes ovoid or globular, smooth, drupaceous (noxious weed, often coastal) \**Chrysanthemoides* (p. 757)  
Annuals, sparingly branched; achenes not as above (leaves  $\pm$  amplexicaul) 50
50. Plant clammy-hairy; involuclral bracts narrow, acute; ray achenes strongly curved, beaked, doubly toothed along the back (Birchip district in Mallee) \**Calendula* (p. 756)  
Plant glabrous; involuclral bracts broad, obtuse; ray achenes straight, narrowly 2-winged \**Chrysanthemum* (p. 740)
51. Head simple with single involucre [if several heads are clustered, as in *Gnaphalium* and *Stuartina*, then each is heterogamous—inner florets bisexual and the outer female] 58  
Apparent head compound, made up of partial homogamous heads with their own involucre [but partial heads sometimes only 1- or few-flowered, and then the whole superficially resembling a simple capitulum] (plants often of sandy, arid inland tracts) 52
52. Dwarf stemless,  $\pm$  star-shaped woolly annual with rosulate, linear-oblong leaves; pappus absent; compound head very broad, flat and sessile (far N.W. Mallee) *Chthonocephalus* (p. 734)  
Dwarf densely woolly annual, stemless or stems prostrate; leaves obovate-cuneate; pappus present *Actinobole* (p. 732)  
Not as above; stems erect and leafy or, if leaves radical, then inflorescence stalked and pappus present 53
53. Compound heads without a general involucre, usually <8 mm. wide 55  
Compound heads surrounded by a general involucre, >8 mm. wide; pappus of 1 to several bristles or narrow plumose scales (leaves linear, >2 cm. long) 54
54. General involucre of few small bracts (concealed at anthesis); heads yellow, globoid, long-pedunculate; receptacle of partial heads with chaffy scales *Craspedia* (p. 733)  
General involucre of numerous bracts with white  $\pm$  radiating laminæ; receptacle of partial heads naked (leaves sheathing or amplexicaul at base) *Myriocephalus* (p. 728)
55. Pappus conspicuous, of several plumose bristles (small cottony Mallee herbs to a dense coastal bush, 1-3 ft.) *Calocephalus* (p. 731)  
Pappus none, or of a few short free or united scales 56
56. Partial heads many-flowered, with densely woolly involucre (small erect annual of N.W. Mallee; pappus none, but several long simple hairs at base of corolla; leaves  $\pm$  terete, to 1 cm. long) *Eriochlamys* (p. 731)

- Partial heads *1- to 3-flowered* (if ever up to 7-flowered, then involucre *glabrous*) 57
57. Pappus a *toothed cup or crown* of minute adhering scales; compound heads *globoid*; bracts of partial heads with *short coloured laminae* or appendages *Gnephosis* (p. 730)
- Pappus lacking or of a few  $\pm$  free scales (if ever cup-like, then the compound heads *elongated*); bracts of partial heads *without laminae* or appendages *Angianthus* (p. 729)
58. Plant a highly *aromatic biennial herb of tobacco-like appearance*; leaves entire, large and stem-clasping (3-12" long); inflorescence a very large, loose, often drooping terminal panicle, attaining heights of 3-10 ft. 59
- Plant *not* combining the above characters of habit, size and inflorescence 60
59. Upper parts and under-sides of leaves *white-tomentose*; involucre *ovoid-globular*, 4-5 mm. long, *yellow-brown*, with 12-25 florets; pappus *present*, of barbellate bristles (chiefly coastal) *Apalochlamys* (p. 705)
- All parts of plant *green*, glandular-pubescent or  $\pm$  glabrescent; involucre *narrow*,  $\pm$  6 mm. long, *pink to bronzy-red*, with 3-4 florets; pappus *absent* (forests of Grampians and E. Gippsland) *Calomeria* (p. 724)
60. Pappus *present* 73
- Pappus *absent* (or reduced to a microscopic rim) 61
61. Heads *few*, often isolated (small herbs, sometimes annual or prostrate) 65
- Heads *very numerous*, in compact corymbs or long panicles (tall herbs or shrubs) 62
62. Leaves *deeply dissected*, odorous; plant *non-viscid* 64
- Leaves *entire* or nearly so; *viscid shrubs or semi-shrubs* (to 3 ft. high) 63
63. Inner involucre bracts *radiate*, scarious, with *white spreading laminae*; florets  $\pm$  20; leaves  $\pm$  *decurrent*, often with wings along stem, *linear-lanceolate* (W. coasts, also Grampians) *Ixodia* (p. 725)
- Involucre bracts all *non-radiate*; florets  $<6$ ; leaves *not* or hardly decurrent, narrow-linear or scale-like *Hæckeria* (p. 725)
64. Leaves  $\pm$  *hairy* (at least on under-side); flower-heads in racemes or *racemose panicles* *\*Artemisia* (p. 746)
- Leaves *glabrous* or nearly so; flower-heads *yellow*, in dense *terminal corymbs* *\*Chrysanthemum* (p. 740)
65. Heads *sessile* or almost so (chiefly small annuals) 69
- Heads distinctly *pedunculate*, erect, usually solitary 66
66. Outer achenes angled, ribbed or terete (neither very flat nor thickened at each side); leaves chiefly *radical* 68
- Outer achenes *strongly compressed*, winged or with thickened margins; leaves *scattered* 67
67. Margins of outer achenes with *boldly dissected wings* ( $\pm$  glabrous annual, with minute ligules on outer florets) *Brachycome* (p. 663)
- Margins of achenes *entire* (corollas of outer florets entirely tubular or absent) *Cotula* (p. 743)

68. Leaves *deeply dissected*; achenes *finely ribbed* [ligules absent in Victorian representatives] *\*Matricaria* (p. 742)  
 Leaves *oblong-cuneate*,  $\pm$  *crenate*; outer florets with *minute ligules*; achenes *non-angular* (widespread) *Solenogyne* (p. 663)  
 Leaves *linear, entire*, thick, crowded, 8-14 mm. long; outer florets *entirely tubular*; achenes with *rounded angles* (rare high-alpine perennial of Bogong High Plains, to 3" high) *Abrotanella* (p. 746)
69. Achenes all *terete* and *entire*, often ribbed 71  
 Achenes (at least the fertile) *much compressed*, bearing wings or auricles 70
70. Leaves *deeply divided*; achenes *broadly winged*, sharply contracted above into a *stout awn* (weed of settlements, often in lawns) *\*Soliva* (p. 745)  
 Leaves *entire*; achenes *narrow*, but with the lateral wings prolonged above into 2 diverging *auriculate horns* (rare annual of N.W. Mallee) *Ceratogyne* (p. 742)
71. Leaves *spathulate*, grey-cottony; heads *conical*, 4- to 6-flowered, *crowded* into small clusters; 2 or 3 inner bracts very narrow with hooked tips, the remainder broad and woolly *Stuartina* (p. 699)  
 Leaves *linear*, glandular-pubescent or cottony; heads neither conical nor crowded, 5- to 10-flowered, the florets manifestly *arcuate*; bracts subequal (annuals <3" high) *Toxanthes* (p. 724)  
 Leaves and heads *not* as above, the latter discoid or hemispherical with numerous florets (>10) 72
72. Plants pungently *aromatic*; bracts in 2 rows; outer female corollas with *short tubes*; achenes coarsely 3- to 4-ribbed or angled (small herbs of damp ground) *Centipeda* (p. 745)  
 Plants  $\pm$  *inodorous*; bracts in 3-4 rows; outer female corollas almost *filiform*; achenes with several fine ribs (small herbs of N.W.) *Epaltes* (p. 698)
73. Pappus of several divaricate *stout barbed awns* *Calotis* (p. 677)  
 Pappus of *capillary bristles* 76  
 Pappus of *flattened scales* (annuals, except for *Rutidosis*) 74
74. Heads *sessile*, crowded at base of the linear-filiform *entirely radical leaves*, the whole resembling a quillwort (*Isoëtes*); florets to 20; pappus of 8-12 elliptic-oblong, obtusish scales (W. districts generally, also Suggan Buggan) *Isoëtopsis* (p. 747)  
 Heads *sessile* in axils; leaves *scattered*; florets 1-4; pappus of 3-6 awned scales (rare, Grampians to Little Desert) *Quinetia* (p. 723)  
 Heads terminal, *stalked*; florets >4; leaves *scattered* 75
75. Annual; bracts *few*, in 2 rows, broad-oblong; fertile achenes *silky-hairy* (N.W. Mallee; leaves narrow-linear) *Elachanthus* (p. 747)  
 Perennial; bracts *numerous* in several rows; achenes *papillose* *Rutidosis* (p. 723)
76. Involucral bracts in *several series, free*, often with scarious margins 78  
 Involucral bracts in a *single row* (except for a few small outer ones at base),  $\pm$  *coherent* at anthesis, almost wholly herbaceous 77
77. Heads <10 mm. long at anthesis; disk florets perfect, *fertile*, with  $\pm$  *glabrous style-arms* *Senecio* (p. 747)

- Heads narrow >12 mm. long (and up to 25 mm.); disk florets structurally perfect but *sterile*, their style-arms *papillose-hairy* over the outer faces (purplish perennial herb of far E. & N.E. highlands; leaves with large coarse teeth) *Arrhenechthites* (p. 756)
78. Involucral bracts variously shaped, *scarious* or leathery for the greater part (except in *Millotia* and *Ixiolena* which have homogamous florets); ligules present only in *Podolepis*; anthers *contracting into tails* at base 81
- Involucral bracts *linear* to narrow-linear, *herbaceous* with narrow scarious margins; florets heterogamous, the outer with minute ligules (except in *Conyza* and forms of *Olearia tubuliflora*); anthers *obtuse* at base 79
79. Small under-shrub to 8"; heads very small, in terminal *cymose clusters*; pappus-bristles of disk florets *distinctly fewer* than those of ray florets *Minuria* (p. 676)
- Shrubs >3 ft. high; heads small, very numerous, *sessile on short lateral branches* that often form leafy racemes; bracts obtuse; pappus *uniform* throughout florets *Olearia* (p. 685)
- Herbs (annual or perennial); heads in large loose panicles, or several together on long scapes; pappus *uniform* 80
80. Plant almost *glabrous*, erect; flower-heads *very numerous* in long panicles; ligulate florets exceeding involucre, few or many; pappus-bristles in 2-3 rows; central hermaphrodite florets *numerous* \**Aster* (p. 680)
- Plant  $\pm$  *hairy*; ligules of outer florets *minute* (shorter than tubes); pappus-bristles in 1 row and central hermaphrodite florets *few* (rank weeds, mostly with small numerous greenish heads in large panicles) \**Conyza* (p. 681)
81. Florets *yellowish*; heads never at once globose and >1 cm. long; receptacle *naked*; achenes with *straight* insertion 83
- Florets *purple*; heads  $\pm$  *globose*, >1 cm. long; receptacle beset with *fine hairs*; achenes *obliquely or laterally* attached 82
82. Bracts chartaceous-scarious, *torn or fimbriate* on the margins; peduncles *leafy*; achenes *smooth* *Centaurea* (p. 763)
- Bracts hard, leathery, quite *entire*, tightly imbricate; peduncles long, *naked*; achenes *costate*, rugulose between ribs (tall, cane-like & almost leafless when in flower; at Myrtleford) \**Microlonchus* (p. 767)
83. Compact *greyish-woolly desert shrub*, 2-3 ft. high; leaves flat, obovate-cuneate, 5-10 mm. long; heads unisexual, *solitary and sessile* at the ends of short branchlets, the female florets filiform (far W.) *Cratystylis* (p. 698)
- Dwarf, *decumbent* or matted *alpine perennials*; heads unisexual, *solitary, terminal, sessile* or almost so within the last leaves 84
- Habit *not* as above; heads *never unisexual*, rarely both solitary and sessile 85
84. Leaves *obovate-oblanœolate* to subspathulate, with closely appressed *silvery or brownish tomentum*, mostly 4-7 mm. long; all but the outermost bracts with small *white spreading laminæ* *Ewartia* (p. 703)
- Leaves *linear*, rigid, *mucronate, glabrous*, 5-10 mm. long; bracts *without*

- white or coloured spreading laminæ (Bogong High Plains near Mt. Cope) *Parantennaria* (p. 705)
85. Heads terminal, *narrowly conic*, >1" long; outer bracts *leafy*; achenes minutely pedicellate; pappus-bristles 4-6, plumose above (small glandular-pubescent annual, chiefly of Mallee but also Port Phillip and Wilson Prom.) *Podosperma* (p. 719)
- Heads terminal on long, naked, wiry peduncles; outer bracts very numerous, *filiform*, *plumose*; pappus-bristles 2-4, plumose above ( $\pm$  woolly annual to 6", in N.W. Mallee) *Athrixia* (p. 726)
- Heads neither long-conical (>1") nor with filiform plumose bracts (pappus-bristles plumose only in *Helipterum*, and then from base to tip) 86
86. Achenes *not beaked* (but sometimes contracted at apex) 88
- Achenes narrowed above into *distinct beaks* (annuals or small herbaceous perennials with linear leaves) 87
87. Bracts *few*, *herbaceous*,  $\pm$  *equal*; heads solitary; florets *whitish* *Millotia* (p. 722)
- Bracts *numerous* in several rows, *unequal*, at least the inner ones clawed and with *scarious laminæ*; heads solitary, *long-pedunculate*; florets *yellow* *Leptorhynchos* (p. 720)
- As for the last, but bracts *petaloid* with spreading (at length reflexed) laminæ and the showy golden heads in rather *dense corymbs* (N.W. Mallee; annual to 1 ft. high) *Waitzia* (p. 722)
88. Filiform female florets *more* numerous than the bisexual inner ones;  $\pm$  *woolly herbs*, often annual, seldom >18" high; heads small, densely clustered (solitary only in one alpine species) *Gnaphalium* (p. 699)
- Female florets *fewer* than the bisexual inner ones, or florets all similar and bisexual; rarely woolly herbs with clustered heads 89
89. Florets usually <10, each subtended and *partly enclosed by a bract* resembling those of the involucre but narrower ( $\pm$  odorous shrubs, with small numerous non-radiate heads in drooping panicles or dense terminal corymbs) *Cassinia* (p. 703)
- Florets *without* subtending bracts [woody shrubs with numerous, little, corymbosely arranged heads *only* in the *Ozothamnus* Section of *Helichrysum*] 90
90. Pappus-bristles prominent, *plumose from the base* (annuals, or occasionally small herbaceous perennials with showy radiate bracts) *Helipterum* (p. 705)
- Pappus-bristles simple, barbellate or sometimes slightly plumose toward apex only 91
91. Involucral bracts linear, *herbaceous*, only the inner ones with small scarious tips (loosely woolly perennials to 1 ft. high; heads solitary, terminal) *Ixiolæna* (p. 709)
- Involucral bracts *scarious or membranous* for the greater part 92
92. Inner bracts with *opaque spreading laminæ*, forming a long or short petaloid ray; if otherwise and rayless, then either shrubs with many small heads in *dense corymbs* or a diminutive desert annual having few capillary branches and minute urn-shaped heads (*all* florets with a pappus) *Helichrysum* (p. 710)



- Bracts *without petaloid laminae* (herbs, the outer florets sometimes with a *reduced pappus* or none) 93
93. Heads very small, *in clusters* forming a loose spreading and almost leafless panicle; bracts *all sessile*; style-arms *filiform* (glabrous desert herb to 18" high) *Epaltès* (p. 698)  
Heads *not* as above, usually solitary and long-stalked; at least the inner bracts manifestly *clawed*; style-arms *truncate* 94
94. Outer female florets *shortly ligulate*,  $\pm$  2- to 4-lobed *Podolepis* (p. 726)  
Outer female florets *without ligules* (bracts narrow and woolly-ciliate along margins, except in *L. linearis*) *Leptorhynchos* (p. 720)
95. Flowers *yellow* (rarely streaked with mauve, and the heads then <10 mm. wide) 97  
Flowers *blue or violet*; heads comparatively large (plants 1-3 ft. high, with long, parsnip-like taproot) 96
96. All the leaves *entire, grass-like*; head solitary, terminal; bracts in *1 row*; achene very *long-beaked*; pappus of *plumose bristles* (glabrous biennial weed) *\*Tragopogon* (p. 770)  
Radical leaves *pinnately lobed*; heads terminal or in axillary clusters of 2-3; bracts in *2 distinct series*; achene *beakless*; pappus a crown of *minute scales* ( $\pm$  hairy perennial herb) *\*Cichorium* (p. 767)
97. Pappus *absent*; downy broad-leaved annual herb with numerous small heads in open panicles (Daylesford, Burnley, W. Gippsland and Bright; leaves ovate-oblong, toothed) *\*Lapsana* (p. 775)  
Pappus of *capillary bristles* (at least in central florets) 99  
Pappus entirely of *scales* 98
98. Involucral bracts *glabrous*, in *2-3 rows*, not changed much in fruit; head solitary, long-pedunculate, *nodding* in bud, 15-25 mm. long; leaves linear-lanceolate, entirely radical (widespread glabrous perennial with edible tuberous roots) *Microseris* (p. 768)  
Involucral bracts  $\pm$  *hairy*, in *1 row*, hardened in fruit and curved around outer achenes which have a denticulate crown-shaped pappus; heads to 10 mm. long, on *swollen peduncles* (scabrid-pubescent annual of W. districts, also Goulburn Valley) *\*Hedypnois* (p. 768)
99. Pappus-bristles (at least the inner row) *plumose* with lateral barbs 107  
Pappus-bristles *simple or slightly barbellate* (receptacle naked) 100
100. Achenes *beakless* or almost so 104  
Achenes with *very long beaks* 101
101. Heads *shortly stalked or sessile*, numerous, lateral to panicle branches, <6 mm. broad; achenes *flat or 5-angled* 103  
Heads all *long-stalked*, >6 mm. broad at anthesis; achenes *subterete*, 10-ribbed 102
102. Leaves *entirely radical, runcinate*; scape *simple* with single large head, leafless, glabrous, hollow; bracts *glabrous* *\*Taraxacum* (p. 771)  
Leaves on scape as well as at base; scape *branched, many-headed*; bracts *hairy* *\*Crepis* (p. 774)
103. Scares *leafy*; heads in narrow or wide-spreading panicles; achene *strongly compressed*, 5- to 7-ribbed on each face (glabrous or  $\pm$  spinulose annuals or biennials) *\*Lactuca* (p. 773)

- Scapes virtually *leafless* at anthesis, whitish, cane-like; heads few together in sessile clusters along panicle branches; achene *terete* or 5-angled (deep-rooted noxious perennial) \**Chondrilla* (p. 771)
104. Leaves and bracts *hairy* (if leaves sometimes glabrous, then long and linear), *non-glaucouscent* 106  
Leaves and involucral bracts *glabrous*,  $\pm$  *glaucouscent*, the former broad and amplexicaul 105
105. Heads in *leafy panicles*,  $<1''$  broad; achenes *compressed*, with 3-5 ribs on each face *Sonchus* (p. 772)  
Heads *solitary* on long peduncles,  $\pm 1''$  broad; achenes *4-angled* and *coarsely tuberculate* (Mallee region; annual) \**Reichardia* (p. 776)
106. Heads *cymose*, subtended by numerous *filiform outer bracts* which exceed the linear inner series; achene short, *compressed*, black, 5-ribbed on each face; pappus bristles 2-5, usually 4 (W. & N.E.) \**Tolpis* (p. 768)  
Heads *without* long-filiform outer bracts; achene long, *terete*, not black, 10-ribbed; pappus of *numerous white silky hairs* \**Crepis* (p. 774)
107. Scapes *leafy*; bracts *pubescent and/or hispid*; achenes all beaked or stalked 109  
Scapes *naked*; leaves entirely *radical*, sinuate or pinnatifid with short broad lobes; bracts *glabrous* (rarely  $\pm$  setose along their mid-veins) 108
108. Receptacle with *chaffy scales*; at least the inner achenes *long-beaked* (scapes often branched) \**Hypochaeris* (p. 768)  
Receptacle *naked*; achenes all *beakless*, the outermost *adhering to phyllaries* and with reduced crown-shaped pappus of small scales (scapes simple) \**Leontodon* (p. 769)
109. Plants finely *flocculose*, at length almost glabrous; leaves usually with a few *narrow-linear lobes*; phyllaries in  $\pm 4$  rows; barbs of pappus-bristles *long and interwoven*; achenes 10-12 mm. long, striated, *glaucouscent*, *beak-like* on a thick stipe (widespread through W., N.W. and Goulburn Valley; low biennial) \**Scorzonera* (p. 771)  
Plants *scabrid or hispid*; leaves entire, sinuate-toothed or shortly incised; phyllaries in 2-4 rows; barbs of pappus-bristles *not interwoven*; achenes *terete*, rugulose, *non-glaucous* *Picris* (p. 770)  
As for the last, but phyllaries in 1 row and the *compressed* achenes with a long *curved hollow beak much swollen at base* (summit area of Mt. Arapiles; erect annual to 8" high) \**Urospermum* (p. 769)

### Tribe EUPATORIÆ

[In Ewart's *Flor. Vict.* 1088 (1931) *Adenostemma viscosum* Forst. & Forst. f. (Sticky Daisy) is accepted as a cosmopolitan but native weed, with the remark "confined to N.W. and E. Victoria, and rare". Although there is ample representation of the species in Melbourne Herbarium from N.S.W. & Qd, the only Victorian material is from Newmerella near Orbost (May 1906), and no other collections appear to have been made in the past 65 years; this occurrence is therefore regarded

as transitory. *A. viscosum* is a lush, annual, glabrous or slightly glandular-pubescent herb 1-2 ft. high, with opposite coarsely-toothed nettle-like leaves and numerous small heads in loose leafy panicles. The genus *Eupatorium* differs in having terminal appendages on its anthers, and several species are cultivated in Victorian gardens, for the profusion of their fluffy flower-heads with pinkish pappus-hairs. *E. riparium* Regel (Mist-flower) and *E. glandulosum* Spreng. (Crofton Weed) occasionally seed in gardens but are not truly naturalized here. Both of these white-flowered, perennial introductions from America are established in many moist situations in N.S.W. where *E. glandulosum* has become a particularly troublesome weed.]

## Tribe ASTEREÆ

### LAGENOPHORA Cass. (1818)

[Cassini originally spelt this generic name as "*Lagenifera*", but later corrected it. Conservation of *Lagenophora* (the later rendering) has been proposed by A. A. Bullock in *Taxon* 15: 75 (1966).]

1. Leaves *deeply lobed*; scapes *villous* with long hairs, bearing 5-11 *cauline leaves*; involucre 8-12 mm. wide; phyllaries *relatively broad*; ligule of ray florets 4-5 mm. long; achenes 1.2-2.0 mm. broad, *abruptly contracting* into beak (scattered from Wimmera & Grampians to far N.E. at border of N.S.W.):

*L. huegelii* Benth. in Endl. et al. *Enum. Plant. Hueg.* 59 (1837).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 291 fig. 75 D & E (1963); Davis, *Proc. Linn. Soc. N.S.W.* 75: 130 (1950); Black, *Flor. S. Aust.* ed. 2: fig. 1150 c (1957)—achene; Fitch in Hooker f., *Flor. Tasm.* 1: t. 49 fig. B, col. (1856), as *L. gunniana*; Cabrera, *Blumea* 14: 296 fig. e-g (1966).

*Vern.*: Coarse Lagenophora (Coarse Bottle-daisy). *Distr.*: CDJNRV—also W.A., S.A., Tas., ? N.S.W.

—Leaves *sinuate-dentate or crenate*; scapes *not villous*, with few *small linear bracts*; involucre mostly <8 mm. wide; phyllaries *narrow*; ligules <4 mm. long; achenes <1.2 mm. broad, *tapering* into beak 2

2. Scape *shortly hirsute*; involucre (at anthesis) 5-8 mm. wide; phyllaries *numerous*; ligules 2.5-4 mm. long; achenes 3-4 mm. long (widespread in cooler parts, from coast to alps):

*L. stipitata* (Labill.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 630 (1917).

*Bellis stipitata* Labill. *Nov. Holl. Plant. Specim.* 2: 55, t. 205 (1806).

*Illust.*: Labillardière (*l.c.*); Curtis, *Student's Flor. Tasm.* 2: 291 fig. 75 A, c (1963); Davis, *Proc. Linn. Soc. N.S.W.* 75: 127 (1950); Black, *Flor. S. Aust.* ed. 2: fig. 1148 E, also 1150 A-B (1957); Fitch in Hooker f., *Flor. Tasm.* 1: t. 49, fig. A, col. (1856), as *L. montana*; Clemens in Cabrera, *Blumea* 14: 302 fig. a-f (1966); Burbidge, *Flor. Aust. Cap. Terr.* fig. 363 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 814 (1971).

*Vern.*: Common Lagenophora (Blue Bottle-daisy). *Distr.*: CDEHJKMNPRST VWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

—Scape *glabrous*, almost capillary, often blackish; involucre (at anthesis) 3-4 mm. wide; phyllaries *few*; ligules 1.5-2 mm. long; achenes 2.1-3.5 mm. long (damp near-coastal tracts, from Port Phillip to Cape Howe):

*L. gracilis* Steetz in Lehm. *Plant. Preiss. 1*: 431 (1845).

*Illust.*: Clemens in Cabrera, *Blumea 14*: 302 fig. g-k (1966).

*Vern.*: Slender Lagenophora. *Distr.*: NPTZ—also W.A., Tas., N.S.W., Qd.

#### SOLENOGYNE Cass. (1828)

*S. bellioides* Cass. in *Dict. Sci. nat. 56*: 174 (1828)

var. *gunnii* (Hook. f.) G. L. Davis in *Proc. Linn. Soc. N.S.W. 75*: 191 (1950).

*Emphysopus gunnii* Hook. f. in Hook. *Lond. J. Bot. 6*: 113-114 (1847);

*Lagenophora gunnii* (Hook. f.) J. M. Black *Flor. S. Aust. 580* (1929).

*Illust.*: Davis *l.c.* 192 fig. 12-13 (1950); Curtis, *Student's Flor. Tasm. 2*: 291 fig. 75 B & F-J (1963); Black, *Flor. S. Aust. ed. 2*: fig. 1151 (1957); Galbraith, *Wild-flowers Vict. ed. 3*: t. 164 (1967); Mueller, *Key Syst. Vict. Plants 2*: fig. 78 (1886), as *Lagenophora emphysopus*; Burbidge, *Flor. Aust. Cap. Terr. fig. 364* (1970), as *S. gunnii*.

*Vern.*: Solenogyne. *Distr.*: CDEHJKMNPVW—also S.A., Tas., N.S.W., A.C.T.

[The typical *S. bellioides* var. *bellioides* differs in its *filiform* (not robust) scapes that usually exceed the leaves, and is endemic in N.S.W. and Qd.]

#### \*BELLIS L. (1753)

\**B. perennis* L. *Spec. Plant. 2*: 886 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants 15*: t. 3 (1960); Butcher, *New ill. Brit. Flor. 2*: fig. 1270 (1961); Abrams, *Ill. Flor. Pacific States 4*: fig. 5512 (1960); Perrin, *Brit. flowering Plants 4*: t. 282, col. (1914); Hegi, *Ill. Flor. Mittel-Eur. 6*: t. 258 fig. 4, col. (1915); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg. 5*: fig. 1399, col. (1922); Coste, *Flor. Franc. 2*: fig. 1926 (1903); Everard, *Wild Flowers World t. 22* fig. c, col. (1970).

*Vern.*: Common Daisy (English Daisy). *Distr.*: EJNIPTW—also Tas., N.Z.

BRACHYCOME Cass. (1817)—ut "*Brachyscome*" [corr. Cass., 1825]

- |   |    |
|---|----|
| 1. Leaves scattered, on branching stems   | 13 |
| Leaves all radical; scapes unbranched from base, usually naked  | 2  |
| 2. Leaves toothed or lobed  | 8  |
| Leaves entire   | 3  |
| 3. Fruit edged with a prominent wide wing   | 6  |
| Fruit wingless  | 4  |
| 4. Leaves oblong-cuneate to elliptical, >1.5 cm. wide; fruit $\pm$ 3 mm. long, bearing scattered hairs: |    |

**B. decipiens** Hook. f. in Hook. *Lond. J. Bot.* 6: 114 (1847).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 153 fig. 6, 155 fig. 10 (1948); Galbraith, *Wildflowers Vict.* ed. 3: t. 165 (1967); Fitch in Hooker f., *Flor. Tasm.* 1: t. 47, col. (1856).

*Vern.*: Field Daisy. *Distr.*: Widespread in cooler parts of Victoria, chiefly on grassland or in damper woodland formations (but not in Mallee or drier northern plains) and ranging from sea-level to alps where it occurs in the grassland, alpine herbfield, alpine heath, bog, and subalpine woodland formations (e.g. Bogong and Dargo High Plains, Omeo, Wulgulmerang, Melbourne district, Creswick, Hawkesdale, Glenelg R.); N.S.W., A.C.T., Tas.

—Leaves linear to oblanceolate, <1.5 cm. wide; fruit *glabrous* 5

5. Involucral bracts  $\pm$  12, broad, *obtus*; fruit *flat*, with thickened margins and *minute* pappus:

**B. scapigera** (Sieber ex Spreng.) DC. *Prodr.* 7: 277 (1838).

*Senecio scapiger* Sieber ex Spreng. *Syst. Veg.* 3: 559 (1826).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 153 fig. 5, 155 fig. 9 (1948); Ewart, *Flor. Vict.* fig. 342 (1931).

*Vern.*: Tufted Daisy. *Distr.*: Scattered in damp montane to alpine habitats in a wide range of formations—wet sclerophyll forest, subalpine woodland, bog, alpine heath, alpine herbfield and grassland (e.g. Cobberas, Mt. Stradbroke, Nunniong Plateau, Dargo & Bogong High Plains, Mts. Fainter, Buffalo & Stirling, Strathbogie & Upper Yarra Ranges, Delatite R., Eltham, Grampians); N.S.W., A.C.T., Qd (Stanthorpe district only).

—Involucral bracts  $\pm$  20, narrow, *acutish*; fruit *turgid*, with conspicuous pappus (restricted to alps):

**B. obovata** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 74: 146, fig. 4 & 5 (1949).

*Illust.*: Davis (*l.c.*).

*Vern.*: Daisy. *Distr.*: Bordering sphagnum bogs in the Victorian alps at Lake Mountain (type locality), Baw Baws, Cobberas, and Buckety Plain (near Mt. Cope); also N.S.W. (Kosciusko region, 6-7000 ft.).

6. Leaves *narrow-linear*, grass-like; scape often *purplish*; pappus *minute*, *not* protruding above notch formed by winged shoulders of achene:

**B. cardiocarpa** F. Muell. ex Benth. *Flor. aust.* 3: 517 (1867).

*B. linearifolia* Hook. f. *Flor. Tasm.* 1: 185 (1856), *non* DC. (1836).

*Illust.*: King & Burns, *Wildflowers Tasm.* 47, col. (1969); Davis, *Proc. Linn. Soc. N.S.W.* 73: 194 fig. 55, 197 fig. 66 (1948); Lee, *Wild Life* 12: 440 (1950); Galbraith, *Wildflowers Vict.* ed. 3: t. 167 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1152 W. (1957).

*Vern.*: Swamp Daisy. *Distr.*: Widespread on marshy ground in southern Victoria, from Wilson Prom. to the Lower Glenelg R., favouring heath formations (Boronia, Glenlyon, Mt. Cole, Hawkesdale, Grampians, Casterton, Portland); N.S.W. (rare—on Upper Darling and at Quartzville in Southern Highlands), S.A., Tas.

—Leaves *broad-linear* to narrowly *spathulate*; pappus *conspicuous*, level with or projecting well above wings of achene 7

7. Involucral bracts <25; ray florets usually *mauve*; achene <2 mm. long, its *opaque* wing with *conspicuous* straight marginal hairs (plant of low-land marshy ground):

**B. uliginosa** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 79: 203, 205 fig. 1-4 (1955).

*Illust.*: Davis (*l.c.*).

*Vern.*: Daisy. *Distr.*: Apparently endemic in western Victoria (but possibly extending into South Australia), on swampy ground in heath formation (e.g. Eltham, Brisbane Ranges, Grampians, Black Range south of Horsham, Little Desert); it bears a close vegetative resemblance to *B. scapigera*, and may well have a wider range than recognized at present.

—Involucral bracts 25-40; ray florets *white*; achene 2-3 mm. long, 1-2.5 mm. wide, its broad *translucent* wings with *minute*, *scattered* glandular hairs (alpine plant):

**B. nivalis** F. Muell. [*See* p. 666]

var. **alpina** (Benth.) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 198, 194 fig. 57 (1948).

*B. cardiocarpa* var. *alpina* Benth. *Flor. aust.* 3: 517 (1867);

*B. tadgellii* J. R. Tovey & P. F. Morris in *Vict. Nat.* 38: 135, t. 4 (1922).

8. Leaves distinctly *lobed*; achene *winged* 10  
Leaves variously *toothed*; achene widely winged, 3-4 mm. long ( $\pm$  glandular-hairy perennial):

**B. aculeata** (Labill.) Lessing. [*See* p. 675]

Leaves *crenate* or slightly *toothed*; fruit *wingless* 9

9. Plants *glabrous*; scape about twice as long as leaves; achene  $\pm$  3 mm. long, with *scattered* hairs:

**B. decipiens** Hook. f. [*See* p. 664]

Plants  $\pm$  *glandular*; scape *very slender*, often >3 times the length of leaves; achene *glabrous*, <2 mm. long, the pappus *minute*:

**B. tenuiscapa** Hook. f. in Hook. *Lond. J. Bot.* 6: 114 (1847).

*B. alpina* P. F. Morris in *Vict. Nat.* 41: 31, t. 1 (1924);

*B. scapiformis* DC. var. *tenuiscapa* (Hook. f.) Benth. *Flor. aust.* 3: 517 (1867).

*Illust.*: Morris (*l.c.*); Davis, *Proc. Linn. Soc. N.S.W.* 73: 153 fig. 3 & 4, 155 fig. 8 (1948); Fitch in Hooker f., *Flor. Tasm.* 1: t. 48 fig. B, col. (1856).

*Vern.*: Daisy. *Distr.*: Rare in Victoria, where known only from alpine grassland at Pretty Valley on the Bogong High Plains, near Cobungra and Ballarat; N.S.W. (open forest in New England highlands), Qd (Stanthorpe district), Tas.

[The var. *pubescens* (Benth., ut *B. decipiens* var.) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 153 (1948) differs in its *much broader* (to 1·8 cm.), *macroscopically* hairy leaves and shorter scapes—as in *B. decipiens*. It is recorded for Ballarat district, Vic., but otherwise appears to have a very disjunct distribution in New England, N.S.W., and southern Tasmania.]

10. Annuals; leaves *simply pinnatisect*, with *narrow-linear* lobes; ray florets 1·4 mm. long (rarely more) 12  
Perennials; leaves either with a few broad-linear lobes *or* much divided (2·3 times pinnatisect); ray florets 5·10 mm. long 11
11. Involucral bracts <25; ray florets usually *mauve*; achene <2 mm. long, its wing *opaque*, with *conspicuous marginal hairs* (lowland plant with *slightly lobed* leaves):

***B. uliginosa* G. L. Davis** [See p. 665]

Involucral bracts 25·40; rays *white*; achene 2·3 mm. long, 1·2·5 mm. wide, its broad *translucent* wings with *minute*, *scattered* glandular hairs; pappus relatively *large* (alpine plant with *much dissected* foliage):

***B. nivalis* F. Muell. in Trans. phil. Soc. Vict. 1: 43 (1855).**

*Illust.*: Mass, *Flowers aust. Alps* 11 (1967); Davis, *Proc. Linn. Soc. N.S.W.* 73: 194 fig. 56 & 57, 197 fig. 67 (1948); Morris, *Vict. Nat.* 38: t. 4 opp. 135 (1922), as *B. tadgellii*.

*Vern.*: Snow Daisy. *Distr.*: Restricted in Victoria to subalpine woodland and alpine herbfield, where it often forms an alliance with *Danthonia alpicola* as co-dominant (Cobberas, Bogong and Dargo High Plains, The Twins, Mts. Bogong, Feathertop, Hotham, Speculation, Cobbler, Buffalo, Buller & Wellington); also N.S.W. (Kosciusko region, 5·7000 ft.), A.C.T.

[The var. *alpina* (Benth., ut *B. cardiocarpa* var.) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 198, 194 fig. 57 (1948) is co-extensive with the typical form and has identical fruits, but differs in its more or less *entire*, linear to spatulate leaves. *B. tadgellii* J. R. Tovey & P. F. Morris in *Vict. Nat.* 38: 135 (1922) was described from a collection of this variety having completely abortive achenes. An excellent colour portrait is given by D. Baglin in *Alpine Flowers of Kosciusko State Park* t. 7 (1962).]

12. Wings of achenes with *long silky hairs*; pappus *long*, about  $\frac{1}{2}$  the length of fruit which is 3·4·5 mm. (plant of northern and western plains; involucral bracts 10·16, *very broad* and obtuse):

***B. lineariloba* (DC.) Druce in Rep. bot. (Soc.) Exch. Cl. Manchr 1916: 610 (1917).**

*Steiroglossa lineariloba* DC. *Prodr.* 6: 39 (1838);

*B. pachyptera* Turcz. in *Bull. Soc. Nat. Moscou* 24<sup>1</sup>: 175 (1851).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 116, col. (1965); Davis, *Proc. Linn. Soc. N.S.W.* 73: 166 fig. 21, 172 fig. 31 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 E (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 15 n. 349 (1965).

*Vern.*: Hard-head Daisy. *Distr.*: Abundant in north-western Victoria, chiefly on

clay flats and occurring in the savannah woodland, river forest, mallee and saltbush formations (Bendigo, Mitiamo, Kerang, Swan Hill, Boort, Wyche-proof, Donald, Wimmera generally, Little Desert, Big Desert, Wyperfeld Nat. Park, Far North-west); N.S.W., S.A., W.A., Cent. Aust.

—Wings of achenes with *short, glandular marginal hairs*; pappus  $< \frac{1}{8}$  the length of fruit which is  $\pm 1$  mm. long (rare plant of north-eastern and eastern ranges):

**B. ptychocarpa** F. Muell. in *Trans. phil. Soc. Vict.* 1: 43 (1855).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 158 fig. 14, 172 fig. 25 (1948).

*Vern.*: Daisy. *Distr.*: Rare in Victoria, where known only from rocky terrain in the Buffalo and Strathbogie Ranges and on Pine Mtn. near Walwa; also N.S.W. (from granite peaks along Snowy River near the Victorian border to Mt. Macquarie near Carcoar).

- |     |   |    |
|-----|---|----|
| 13. | All or most leaves <i>toothed or lobed</i>  | 22 |
|     | Leaves <i>entire</i> (rarely, some leaves having 1 or 2 lobes)  | 14 |
| 14. | Fruits (at least of <i>all</i> the disk florets, and often of ray florets too) with <i>marginal wings</i>   | 19 |
|     | Fruits <i>wingless</i>  | 15 |
| 15. | Annual, 1-10" high; leaves <i>glandular-pubescent</i> ; achene <i>linear-cuneate</i> , 1.5-2 mm. long, the centre of each face bearing prominent <i>rolled hairs</i> ; pappus relatively <i>long</i> and conspicuous: |    |

**B. leptocarpa** F. Muell. in *Trans. phil. Soc. Vict.* 1: 43 (1855).

*B. exilis* sens. Ewart *Flor. Vict.* 1095 (1931), *non* Sond. (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 158 fig. 12, 172 fig. 23 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 r & fig. 1154 (1957).

*Vern.*: Daisy. *Distr.*: Frequent on drier grasslands of western Victoria, from Melbourne district to the Little Desert, but not in Far North-west Mallee (You Yangs, Seymour, Longwood, Heathcote, Bendigo, Axedale, Creswick, Hopkins R., Wimmera generally, St. Arnaud, Jeparit etc.); N.S.W., S.A.

—Perennials; leaves *glabrous*; pappus *minute or absent* 16

- |     |  |    |
|-----|--|----|
| 16. | Rays pale blue to violet; fruit entirely <i>smooth</i> (or minutely glandular-hairy)   | 18 |
|     | Rays white or lilac; fruit <i>tuberculate</i> on each face   | 17 |
| 17. | Leaves broad-linear ( $\pm 1.5$ mm. wide); ray florets <i>lilac</i> , $< 20$ ; achene <i>narrowly oblong-cuneate</i> , almost covered with coarse hair-tipped tubercles (rare plant of plains and sandy woodland): |    |

**B. trachycarpa** F. Muell. in *Linnæa* 25: 399 (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 214 fig. 92, 217 fig. 103 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 i (1957).

*Vern.*: Daisy. *Distr.*: Rare in Victoria, where known only from grassland and open woodland near Werribee and Dimboola; all States except Tas. (but only in south-east of W.A.—“between Mt. Ragged and Victoria Springs”).

—Leaves narrow-linear, *grass-like*,  $< 3$  mm. wide, 1-veined below; ray florets *white*, 40-50; achene  $\pm$  *obovoid*, becoming  $\pm$  *turgid* at maturity,



with small tubercles *toward centre* of each face (plant of swamps and marshy ground):

**B. basaltica** F. Muell. *Fragm. Phyt. Aust. 1*: 50 (1858).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 166 fig. 35 & 36, 180 fig. 42 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 H (1957).

*Vern.*: Daisy. *Distr.*: Scattered on swampy ground of savannah woodland and river forest in northern and western parts of State, from near Albury to the Little Desert (Boorhaman, Nathalia, Rushworth, Nagambie, Kerang, Swan Hill, Kulkyn Nat. Forest, Barber's Lake near Dimboola, Serviceton district), also Keilor basalt plains near Sydenham; N.S.W. (Riverina etc.), Qd, S.A. (Murray lands, Eyre Peninsula).

[Victorian (also New South Welsh and South Australian) populations are all referable to the var. *gracilis* Benth. *Flor. aust.* 3: 515 (1867). Typical *B. basaltica* is restricted to Queensland (from Peak Downs and Broad Sound to the N.S.W. border) and differs in its more robust habit and *much broader* leaves—broad- to ovate-lanceolate, the lower prominently 3-veined below, the upper stem-clasping.]

18. Ray florets 20-35 per head; achenes *obovoid, turgid, not* marginate, 1.5 mm. wide; stalks of heads *glandular*, at least in upper portions:

**B. graminea** (Labill.) F. Muell. *Fragm. Phyt. Aust. 1*: 49 (1858).

*Bellis graminea* Labill. *Nov. Holl. Plant. Specim. 2*: 54, t. 204 (1806).

*Illust.*: Labillardière (*l.c.*); Davis, *Proc. Linn. Soc. N.S.W.* 73: 172 fig. 32 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 F (1957).

*Vern.*: Daisy. *Distr.*: Marshy places (including saline marsh near sea) almost throughout southern Victoria, extending to the north-east but absent from alps and Mallee (Mallacoota, Gippsland Lakes, Port Phillip area, Anglesea, Lorne, Lower Glenelg R., Grampians, Pyrenees, Thornton, Omeo, Benambra, Lower Mitta Mitta R.); N.S.W., A.C.T., Qd (extreme south-east), S.A., Tas.

—Ray florets  $\pm$  40 per head; achenes *linear-cuneate, flat*, with paler slightly *thickened margins*, <1 mm. wide; stalks of heads entirely *glabrous* (chiefly coastal plant):

**B. parvula** Hook. f. *Flor. Tasm. 1*: 185 (1856).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 211 fig. 87 & 88, 217 fig. 99 (1948); Lee, *Wild Life* 12: 26 (1950); Black, *Flor. S. Aust.* ed. 2: fig. 1152 L (1957).

*Vern.*: Coast Daisy. *Distr.*: Sea-cliffs and marshy saline ground near coast almost throughout southern Victoria, from Snowy R. to Lower Glenelg R., the var. *lissocarpa* extending inland to Ballarat, Grampians district (where frequent) and Dimboola; S.A., Tas. (including islands of Bass Strait).

[The var. *lissocarpa* (J. M. Black, *ut sp.*) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 213 (1948) has fruits identical with those of the typical form, but differs strikingly in its much *larger, pinnatisect* leaves (to 4" long) and inland habitat. It is restricted in Victoria to moist, sheltered situations chiefly in and near the Grampians, but ranging to the Little Desert near Kiata, to the Lower Glenelg R. and through south-eastern South Australia to the Mt. Lofty Ranges and St. Vincent Gulf.]

19. Fruits *dimorphic* (the ray achenes *without* wings); pappus *minute* (erect glandular-pubescent perennial, with linear  $\pm$  pungent-pointed leaves 1 mm. wide):

**B. ciliaris** (Labill.) Lessing. [See p. 673]

var. *subintegrifolia* G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 225, 214 fig. 96 (1948).

—Fruits *homogeneous*, all winged; pappus usually *conspicuous* (glabrous plants with  $\pm$  linear leaves)

20. Delicate *annual* <6" (often only 2-3") high; leaves *narrow-linear*,  $\pm$  1 mm. wide; ray florets 50-60, *white*; wings of achene *entire*,  $\pm$  1 mm. long, *folded back on themselves* and almost enclosing one face of the fruit (plant localized on wet depressions of northern plains):

**B. muelleroides** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 194 fig. 54, 197 fig. 64 & 65 (1948).

*Illust.*: Davis (*l.c.*).

*Vern.*: Daisy. *Distr.*: In Victoria known only from Ulupna Id (Oct. 1968) and swampy depressions between Nathalia and Picola in the Goulburn Valley (Oct. 1930); N.S.W. (Wagga, Bulgandry & Walbundrie).

—As for the last, but ray florets to 18 (only 1 mm. long and inconspicuous), achene  $\pm$  2 mm. long, with wings dissected into *piliferous lobes* and *never folded*:

**B. perpusilla** (Steetz) J. M. Black. [See p. 672]

—Stoloniferous *perennials*; leaves 1.5-10 mm. wide; ray florets <40, often mauve or blue; wings of achene  $\pm$  *flat*,  $\pm$  2 mm. long

21. Involucral bracts *obtus*, *obovate*, with broad *scarious* margins; achene *smooth*, the *inflated wings entire* and with *minute* marginal hairs:

**B. radicans** Steetz in *Lehm. Plant. Preiss. I*: 429 (1845).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 166 fig. 20, 172 fig. 30 (1948).

*Vern.*: Marsh Daisy. *Distr.*: In Victoria known only from swampy ground on Nunniong Plain (at 3500 ft. alt.) and along Morass Ck near Benambra; also N.S.W., A.C.T., Tas.—chiefly in highland bog formation, ascending to the alps.

—Involucral bracts *acute*, *broad-linear*; achene *tuberculate*, the *narrow wings* irregularly *toothed* and with *coarse* glandular hairs (especially at base):

**B. angustifolia** A. Cunn. ex DC. *Prodr.* 5: 306 (1836).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 158 fig. 15 & 16, 172 fig. 26 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 G (1957).

*Vern.*: Daisy. *Distr.*: Scattered in swampy places at Morass Ck near Benambra, Black Mtn near Wulgulmerang, Lorne, Portland & Lower Glenelg R., the var. *heterophylla* occurring only in far East Gippsland (Howe Ra., Genoa R., Karlo Ck, Mt. Drummer, Wingan R. etc.), also in the far north-east at Mt.

Granya & Pine Mountain; N.S.W., S.A. (south-east), Tas.—in both wet sclerophyll forest and wet tussock grassland.

[The var. *heterophylla* (Benth., *ut sp.*) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 162 (1948) differs from the typical form in being a shortly *glandular-hairy* plant of drier situations, and especially in its *broader*, more or less *pinnatisect* leaves; it extends from the Queensland border, through coastal districts of New South Wales to far eastern and N.E. Victoria.]

22. Fruits of disk florets *winged*, or at least with very *broad* and thickened marginal *flanges* 32  
Fruits all *wingless* (but sometimes sharply angled) 23
23. Achene *thick* and conspicuously *angled* by longitudinal folds 29  
Achene thin or without longitudinal folds 24
24. Perennials; rays lilac to bright blue; achene flattened or turgid,  $\pm$  *tuberculate* all over 26  
Annuals; rays white or pale bluish; achene flattened, 1.5-2 mm. long, *smooth* or somewhat hairy but *not tuberculate* 25
25. Achene with long, *rolled hairs*; pappus *conspicuous*:

**B. leptocarpa** F. Muell. [See p. 667]

Achene *smooth* (rarely with a few rolled hairs toward centre); pappus *microscopic* or absent (plant of western Victoria, chiefly in and around the Grampians):

**B. parvula** Hook. f. [See p. 668]

var. *lissocarpa* (J. M. Black) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 213, 211 fig. 88 (1948).

*B. lissocarpa* J. M. Black in *Trans. roy. Soc. S. Aust.* 52: 227 (1928).

26. Plants trailing or *weakly ascending*; leaves narrowly or broadly *oblong-cuneate*, crenate or *coarsely toothed* 28  
Plants usually *erect* with wiry stems; leaves once or twice *pinnatisect*, with linear to oblanceolate segments 27
27. Leaves usually 2-3" long, *much dissected*; ray florets 15-30, usually 7-10 mm. long; achene *turgid*, 2.0-2.5 mm. long:

**B. multifida** DC. *Prodr.* 5: 306 (1836).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 177 fig. 41, 180 fig. 49 (1948); Swaby in *Your Garden* 7: 21 (Aug. 1954).

*Vern.*: Cut-leaf Daisy. *Distr.*: Widespread in forest formation almost throughout State, avoiding the Mallee, open plains and alps, and preferring sheltered rocky places (e.g. Murray, Loddon, Gellibrand & Snowy Rivers, Mt. Granya, Lake Wellington, Dandenongs, Kinglake Nat. Park, Mt. Macedon, Daylesford, Bendigo, Bealiba, Pyrenees, Mt. Cole, Grampians); N.S.W., Qd (south-east).

[In Victoria the typical form, with narrow linear-subulate leaf-segments, is restricted to drier terrain of a few north-western localities; but the var. *dilatata* Benth. *Flor. aust.* 3: 520 (1867), having broad-linear to almost cuneate ultimate segments, ranges widely over the State and favours sheltered situations on rocky hillsides—it extends to the central coastal area of New South Wales.]

- Leaves <2" long, with 1-6 narrow-linear lobes (to 6 mm. long); ray florets <15,  $\pm$  5 mm. long; achene *flat*, <2 mm. long:

**B. trachycarpa** F. Muell. [See p. 667]

28. Heads few; bracts *linear, acute*; achene *flat*, 2 mm. long, with a few *minute scattered tubercles*; pappus *yellowish* (montane plant of *rocky declivities* in far east):

**B. petrophila** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 74: 147, 146 fig. 6 & 7 (1949).

*Illust.*: Davis (*l.c.*).

*Vern.*: Rock Daisy. *Distr.*: Apparently endemic in eastern Victoria and known with certainty only from rhyodacite cliff-faces along Little River & Boundary Ck near Wulgulmerang and Murrindal R. near Buchan; similar collections, but lacking mature fruits, have been made on drier terrain in Omeo and Beechworth districts—they are referred with hesitation to *B. petrophila*.

- Heads usually numerous (to 80); bracts *obovate, obtuse*; achene *turgid*, 2.0-2.5 mm. long, densely and coarsely *tuberculate*; pappus *white*, relatively large (rare plant of plain tracts in far north-west):

**B. melanocarpa** Sond. & F. Muell. in *Linnæa* 25: 476 (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 177 fig. 40, 180 fig. 47 & 48 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 b (1957).

*Vern.*: Daisy. *Distr.*: Doubtfully Victorian, the record being based on old specimens labelled "Murray River", but the species occurs plentifully in far south-western New South Wales and at Renmark on the Murray in South Australia; so its presence in Far North-west Victoria may be anticipated. River forest, black-soil flats and grassland are favoured in N.S.W. and western Qd.

29. Ray florets  $\pm$  3 mm. long; achene 1.5-2 mm. long, *without* any pappus; anthers *without* appendages (rare plant of Wimmera region):

**B. exilis** Sond. in *Linnæa* 25: 473 (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 214 fig. 91, 217 fig. 102 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 o (1957).

*Vern.*: Daisy. *Distr.*: Hitherto much confused with the vegetatively similar *B. leptocarpa* F. Muell., but now known in Victoria *only from the "Wimmera"* (without definite locality); otherwise in mallee and open forest formations of western N.S.W., S.A. & W.A.—often on swampy ground.

- Ray florets often >4 mm. long; achene with *conspicuous often oblique pappus*,  $\pm$  quadrangular; anthers appendiculate

30. Robust *perennial* up to 18" high; ray florets usually >25 (up to 50),  $\pm$  12 mm. long; pappus often *yellowish*, about  $\frac{1}{4}$  the length of achene which is pale to dark reddish-brown and 2-3 mm. long:

**B. diversifolia** (R. Graham ex Hook.) Fisch. & C. Mey. *Ind. Semin. Petrop.* 2: 31 (1835).

*Pyrethrum diversifolium* R. Graham ex Hook. *Exot. Flor.* 3: t. 215 (1826-27).

*Illust.*: Swan in Hooker (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 221, col. (1968); Davis, *Proc. Linn. Soc. N.S.W.* 73: 200 fig. 68-70, 207 fig. 77 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 A (1957); Garnet, *Wildflowers Wilson's Prom.* t., n. 781 opp. 143 (1971).

*Vern.*: Tall Daisy. *Distr.*: Widely distributed throughout Victoria (except in the Mallee and on drier northern plains), extending from sea-level to alps but preferring sheltered rocky places; all States except W.A. (localized in southern Qd), A.C.T.

[The var. *dissecta* G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 202, 200 fig. 70 (1948) is distinguished by its *much branched* scapes and thin, *doubly pinnatisect* leaves with *linear* ultimate segments; known only from the Dargo High Plains in Victoria, it extends through the tablelands of New South Wales into Queensland. The var. *maritima* Benth. *Flor. aust.* 3: 511 (1867) also usually has twice-pinnatisect leaves, but this more robust plant differs in its *thicker* blunter,  $\pm$  *oblong* leaf-segments to 4 mm. broad; it is frequent on the eastern islands of Bass Strait, and may be expected to occur on adjacent coasts of the Victorian mainland (e.g. Wilson's Promontory).]

—Weak *annuals* <10" (and usually <5") high; ray florets <25 and usually 4-8 mm. long; pappus *white*, < $\frac{1}{4}$  the length of achene 31

31. Plant *glandular-hairy*; achene *black* at maturity, 1.2-2.5 mm. long, the longitudinal folds *broken up into tubercles*; pappus exceedingly *oblique*:

**B. gonicarpa** Sond. & F. Muell. in *Linnæa* 25: 474 (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 205 fig. 72, 207 fig. 79 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 c (1957).

*Vern.*: Dasy. *Distr.*: Scattered on damp sandy depressions in savannah woodland, and mallee formations of northern and north-western Victoria (Barnawartha Warby Range, Mt. Arapiles, Lake Albacutya, Dimboola, Big & Little Deserts, north of Serviceton); all States except Tas., but apparently rare in W.A.

[A population at Broughton's Waterhole in the Little Desert has unusually short ligules to the ray florets—<3 mm. long.]

—Plant almost *glabrous*; achene *brown*, 1.5 mm. long, the folds *not* noticeably tuberculate; pappus *central*, almost as wide as fruit:

**B. readeri** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 204, 205 fig. 73, 207 fig. 80 (1948).

*Illust.*: Davis (*l.c.*).

*Vern.*: Daisy. *Distr.*: Northern and western Victoria, usually on damp ground in river forest, and known with certainty only from Ulupna Id, Nathalia, Peshurst, Poolaigelo and the Wannon River; also S.A. (Joanna in far S.E.).

32. Almost *glabrous* annual <4" high; ray florets *minute*,  $\pm$  1 mm. long; pappus *absent*; achenes with dissected marginal wings:

**B. perpusilla** (Steetz) J. M. Black *Flor. S. Aust.* 587 (1929).

*Silphiosperma perpusillum* Steetz in Lehm. *Plant. Preiss.* 1: 434 (1845); *B. collina* (Sond., ut *Silphiosperma* sp.) Benth. *Flor. aust.* 3: 521 (1867).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 227 fig. 112 & 113 (1948); Black, *Flor. S.*

*Aust. ed. 2: fig. 1152, γ (1957); Garnet, Vegetation Wyperfeld Nat. Park fig. 15 n. 351 (1965).*

*Vern.:* Rayless Daisy. *Distr.:* Damp sandy places almost throughout western Victoria, excepting extreme north-west (Werribee, Tallarook, Seymour, Creswick, Castlemaine, Axedale, Bendigo, St. Arnaud, Wycheproof, Wyperfeld Nat. Park, Wimmera, Little Desert, Grampians, Mt. Emu Ck, Skipton, Annuello); S.A., W.A.; southern N.S.W.

[Most Victorian, and South Australian, populations are referable to the var. *tenella* (Turcz., *ut sp.*) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 231, 227 fig. 113 (1948). This differs from the typical minute West. Australian form in having a branched, sparsely and microscopically glandular-hairy scape and *pinnatisect* leaves; examples closely approaching *B. perpusilla* var. *perpusilla* (with entire leaves 5-10 mm. long) have been found in the Big Desert at Red Bluff, near the South Australian border.]

- Annuals or perennials; ray florets >3 mm. long; pappus *present* 33
- 33. Leaves *toothed* or, at most, *pinnatifid* 36
- Leaves *pinnatisect*, with narrow lobes 34
- 34. Rare annual <5" high; rays *white*; pappus about  $\frac{1}{4}$  the length of achene:

*B. debilis* Sond. in *Linnæa* 25: 477 (1853).

*Illust.:* Davis, *Proc. Linn. Soc. N.S.W.* 73: 158 fig. 13, 172 fig. 24 (1948).

*Vern.:* Daisy. *Distr.:* Scattered and infrequent in western Victoria at Little River near You Yangs, Seymour district and "Wimmera" (without definite locality); also S.A. and south-western N.S.W.

- Perennials; rays  $\pm$  *bluish*; pappus much < $\frac{1}{4}$  the length of achene 35
- 35. Fruits *dimorphic*, those of the ray florets *wingless and tuberculate* and <2 mm. long (plants of drier lowlands):

*B. ciliaris* (Labill.) Lessing *Syn. Gen. Comp.* 192 (1832).

*Bellis ciliaris* Labill. *Nov. Holl. Plant. Specim.* 2: 56, t. 207 (1806).

*Illust.:* Labillardière (*l.c.*); Davis, *Proc. Linn. Soc. N.S.W.* 73: 214 fig. 94-96, 217 fig. 105 & 106 (1948); Black, *Flor. S. Aust. ed. 2: fig. 1152 τ & υ, fig. 1155 (1957); Garnet, Vegetation Wyperfeld Nat. Park fig. 15 n. 347 (1965).*

*Vern.:* Variable Daisy. *Distr.:* Widespread and frequent in river forest, savannah woodland and mallee formations throughout northern and north-western Victoria (Rutherglen, Nathalia, Echuca, Bendigo, Castlemaine, Wimmera generally and Far North-west); all States and Cent. Aust.—in Tasmania apparently confined to east coast and rare.

[In addition to the typical form, with *pinnatisect* leaves and glandular-pubescent scapes, there are three, more or less co-extensive varieties of *B. ciliaris* recognizable in Victoria. The var. *subintegrifolia* G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 225, 214 fig. 96 (1948) has leaves *entire* or almost so; var. *lanuginosa* (Steetz, *ut sp.*) Benth. *Flor. aust.* 3: 519 (1867) has long *white-woolly* hairs on the scapes, while var. *brachyglossa* E. Gauba in *Vict. Nat.* 65: 185, 183 fig. 4 d (1948) is distinguished by its consistently *short* ray florets—only 2 mm. long, compared with 2.5-7 mm. in all other variants of *B. ciliaris*. The last variety, originally described from Murray lands in South Australia, was found by the writer at Wyperfeld National Park in the Victorian Mallee, Sept. 1950, and shortly afterwards by A. M. Jordan in the Little Desert.]

—Fruits *homogeneous*, all winged and quite *smooth* (plant of rocky montane or alpine regions; rays usually bright blue):

**B. rigidula** (DC.) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 219 (1948).

*Steiroglossa rigidula* DC. *Prodr.* 6: 39 (1838);

*B. ciliaris* var. *robusta* Benth. *Flor. aust.* 3: 519 (1867).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 542, co. (1968); Davis, *Proc. Linn. Soc. N.S.W.* 73: 214 fig. 93, 217 fig. 104 (1948); Burbidge, *Flor. Aust. Cap. Terr.* fig. 362 (1970).

*Vern.*: Leafy Daisy. *Distr.*: Except for a single isolated occurrence in the Grampians, restricted in Victoria to montane and alpine localities of the eastern highlands, where frequent in subalpine woodland, alpine herbfield and grassland formations (e.g. Suggan Buggan Range & Mt. Tingaringy, Cobberas, Bogong High Plains, Mts. Bogong, Feathertop, Hotham, Buffalo, Buller & Ligar, Barry Mts., Swift's Creek); N.S.W., A.C.T., Qd (Stanthorpe), Tas.

36. Leaves all linear; achene *smooth*, with *inflated wings* (stoloniferous glabrous perennial of swampy ground):

**B. radicans** Steetz in Lehm. [See p. 669]

At least the lower leaves *broad* and boldly toothed or crenate; achene often  $\pm$  *tuberculate* or *granular*, with thin or thickened wings 37

37. Perennials; fruit *straight*, with *flattened wings* 39

Annuals; fruit *curved*, with *infolded wings* 38

38. Leaves to 5 cm. long; *pinnatipartite*; achene *brown*, 2 mm. long, with *thin wings* (plants up to 16" high):

**B. curvicaarpa** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 192, 194 fig. 52, 197 fig. 61 (1948).

*Illust.*: Davis (*l.c.*).

*Vern.*: Daisy. *Distr.*: In Victoria known only from the Wimmera, along Yarriambiack Ck (1903); but widespread in western New South Wales and Queensland—in savannah woodland, grassland and saltbush formations.

—Leaves <2 cm. long, with  $\pm$  5 segments; achene *black*, <2 mm. long, with *thick rigid*, high wings (plants <6" high):

**B. gracilis** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 79: 206, 205 fig. 9-13 (1955).

*Illust.*: Davis (*l.c.*).

*Vern.*: Dookie Daisy. *Distr.*: Apparently endemic in N.E. Victoria, on sandy-loam approaches to Mt. Major near Dookie.

39. Fruit <1 mm. broad, *narrowly winged* (plant of far East Gippsland):

**B. angustifolia** A. Cunn. ex DC. [See p. 669]

var. **heterophylla** (Benth.) G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 162, 158 fig. 16 (1948).

*B. heterophylla* Benth. in Endl. et al. *Enum. Plant. Hueg.* 50 (1837);

*B. microcarpa* sens. Ewart *Flor. Vict.* 1092 (1931), *non* F. Muell. (1858).

—Fruit >1.5 mm. broad, *widely winged*

40. Achene  $\pm$  2 mm. long, with *small tubercles*; pappus in a deep notch between very broad *irregularly dissected* wings (straggling riparian plant of East Gippsland):

**B. riparia** G. L. Davis in *Proc. Linn. Soc. N.S.W.* 79: 206, 205 fig. 14-17 (1955).

*Illust.*: Davis (*l.c.*).

*Vern.*: Snowy River Daisy. *Distr.*: Apparently endemic in far eastern Victoria, among rocks in gorges of the Snowy and Genoa Rivers (also on sand near the water's edge), but locally abundant.

—Achene 3-4 mm. long, with a few *minute hairs* on the broad body, the wings *entire* or minutely indented and *without* an apical notch (widespread erect plants):

**B. aculeata** (Labill.) Lessing *Syn. Gen. Comp.* 192 (1832).

*Bellis aculeata* Labill. *Nov. Holl. Plant. Specim.* 2: 55, t. 206 (1806);

*Brachycome stricta* DC. *Prodr.* 5: 305 (1836);

? *Brachycome scapiformis* DC. *l.c.* 306.

*Illust.*: Labillardière (*l.c.*); Davis, *Proc. Linn. Soc. N.S.W.* 73: 197 fig. 58 (1948); Black, *Flor. S. Aust.* ed. 2: fig. 1152 x (1957); Burbidge, *Flor. Aust. Cap. Terr.* fig. 361 (1970), as *B. scapiformis*; Morcombe, *Aust. Wildflowers* t. on [18], col. (1970), as *B. scapiformis*.

*Vern.*: Daisy. *Distr.*: Widespread and frequent almost throughout State—except in Far North-west and Far South-west—from sea-level to the highest alps (grassland, herbfield, fjældmark and forest formations), Grampians, Wimmera & Mallee; all States except W.A., but only in south-eastern Qd, A.C.T.

[Type of *B. aculeata* is also the type of De Candolle's *B. stricta*—a superfluous illegitimate name. This population has *branched* scapes, bearing linear to narrowly cuneate leaves, while *B. scapiformis* DC. has *simple* almost naked scapes and oblanceolate to broadly spatulate leaves which are chiefly radical. Both forms occur widely in Victoria, the latter usually having bright blue rays and seeming to favour montane or alpine situations; but, as pointed out by Mrs. G. L. Davis in *Proc. Linn. Soc. N.S.W.* 73: 186 (1948), "there are no real discontinuities between these populations" which differ solely in vegetative characters, and a large number of specimens "occupy an intermediate position". Ewart's attempt in *Flor. Vict.* 1091 (1931) to separate them as species on the key characters of "pappus minute" and "pappus easily visible" is quite futile.]

—Achene 3-4 mm. long, with *longish tubercles*, the very broad wings *deeply dissected* into several bold lobes (erect,  $\pm$  woolly-hairy plants of the Mallee and western plains):

**B. heterodonta** DC. *Prodr.* 5: 305 (1836).

*B. marginata* Benth. in Endl. et al. *Enum. Plant. Hueg.* 60 (1837);

*B. calocarpa* F. Muell. in *Linnaea* 25: 399 (1853).



*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 73: 187 fig. 50, 197 fig. 59 (1948); Galbraith, *Wildflowers Vict.* ed. 3: t. 163 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1152 v (1957)—all as *B. marginata*.

*Vern.*: Lobe-seed Daisy. *Distr.*: Frequent in grassland, savannah woodland and mallee formations almost throughout western Victoria (from basaltic plains around Port Phillip Bay to the Grampians, Wyperfeld Nat. Park and Far North-west); N.S.W., A.C.T., Qd, S.A.

[*B. chrysoglossa* F. Muell. in *Trans. phil. Soc. Vict.* 1: 44 (1855) differs from typical *B. heterodonta* only in its bright orange-yellow (not white) ray florets—a character unique in this genus. It is much less common than the white-flowered plant, and in Victoria is apparently confined to Mallee districts; but in New South Wales it occurs only on the New England tableland. In *Proc. Linn. Soc. N.S.W.* 73: 190 (1948) G. L. Davis made the new combination *B. marginata* var. *chrysoglossa* for this taxon.]

### MINURIA DC. (1836)

1. Ligules of ray florets yellow, only 1-2 mm. long; involucre 2-3 mm. long; leaves glabrous, narrow-linear, <1 cm. long, the mucronate apex recurved (semi-shrub 2-8" high, in N.W. Mallee—Jeparit to Ouyen):

*M. suaedifolia* (F. Muell.) Benth. *Flor. aust.* 3: 499 (1867).

*Kippistia suaedifolia* F. Muell. *Rep. Babbage Exped. S. Aust.* 13 (1859).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 176, col. (1968); Mueller, *Plants indig. Colon. Vict.* t. 35 (1864-65), as *Kippistia suaedifolia*.

*Vern.*: Fleshy Minuria. *Distr.*: BC—also W.A., S.A., N.S.W., Qd.

—Ligules of ray florets white, pink, lilac or bluish, 3-10 mm. long; involucre 3-6 mm. long; leaves mostly >1 cm. long, straight at apex 2

2. Stems ± floccose (white-woolly on young parts); larger leaves 2-3 cm. long, obtuse, often distantly toothed towards apex (far N.W. Mallee):

*M. denticulata* (DC.) Benth. *Flor. aust.* 3: 499 (1867).

*Therogeron denticulatum* DC. *Prodr.* 5: 283 (1836).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 136, col. (1965); Galbraith, *Wild Life (Melb.)* 4: 329 (1942).

*Vern.*: Woolly Minuria. *Distr.*: A—also S.A., N.S.W., Qd, Cent. Aust.

—Stems never floccose; leaves entire, acute

3. Plant minutely pubescent; involucre bracts obtuse, ciliate at apex; pappus often ± reddish; ray achenes densely silky-hairy; leaves narrow-linear, 5-25 mm. long (widespread undershrub, 2-10" tall, on open tracts of Cent., W., N.W. & N. districts):

**M. leptophylla** DC. *Prodr.* 5: 298 (1836).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 231, col. (1968); Leigh & Mulham, *Pastoral Plants Riverine Plain* 135, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1157 (1957).

*Vern.*: Minnie Daisy. *Distr.*: ABCFGHJMNP—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Plant *glabrous*; involucre bracts *acute, not ciliate*; pappus *white* 4

4. Leaves  $\pm$  1 mm. wide, *narrow-linear*; heads *ovoid* to  $\pm$  obconical; bracts and florets 5-9 mm. long; ray achenes 2-3 mm. long, pubescent with hairs that are 2-hooked at tips, their pappus-bristles  $\pm$  30 (far W. & N.W. Mallee):

**M. cunninghamii** (DC.) Benth. *Flor. aust.* 3: 498 (1867).

*Elachothamnus cunninghamii* DC. *Prodr.* 5: 398 (1836).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 79 (1886); Mueller, *Plants indig. Colon. Vict.* t. 34 (1864-65), as *Elachothamnus cunninghamii*.

*Vern.*: Bush Minuria. *Distr.*: AC—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Leaves 2-5 mm. wide, *linear to lanceolate*; heads  $\pm$  *hemispherical*; bracts and florets 3-4 mm. long; ray achenes  $\pm$  1 mm. long, pubescent with *simple* hairs, their pappus-bristles 9-16 (widespread on land prone to inundation along Murray Valley and in Wimmera):

**M. integerrima** (DC.) Benth. *Flor. aust.* 3: 499 (1867).

*Therogeron integerrimum* DC. *Prodr.* 5: 283 (1836).

*Vern.*: Smooth Minuria. *Distr.*: ACFGHLM—also W.A., S.A., N.S.W., Qd, N. Terr., ? Cent. Aust.

## CALOTIS R. Br. (1820)

1. Pappus consisting of *awns only*. 3  
Pappus consisting of an equal number of *awns and alternating scales* 2  
2. Ray florets 25-45, *conspicuous* (3-10 mm. long), *bluish or white*; awns 2-4, *barbed only toward apices*; leaves *cuneate to spatulate*, coarsely toothed near apex (erect pubescent perennial to 1 ft. high or more, along Murray & Goulburn Valleys, also N. part of Whipstick Scrub near Bendigo):

**C. cuneifolia** R. Br. in *Edwards's Bot. Reg.* 6: t. 504, col. (1820).

*Illust.*: Hart in Brown (*l.c.*); Davis, *Proc. Linn. Soc. N.S.W.* 77: 154 fig. 15-19 (1952); Black, *Flor. S. Aust.* ed. 2: fig. 1159 A (1957); Sulman, *Wild Flowers N.S.W.* 2: t. 38 fig. 2 (1914); Sulman, *Aust. Wild Flowers* ser. 2: t. 49 (1913); Hayward & Druce, *Advent. Flor. Tweedside* 88 (1919); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 127 (1906).

*Vern.*: Blue Burr-daisy (Bindi-eye). *Distr.*: ABCFMN RV—also W.A., S.A., N.S.W., Qd, Cent. Aust.

- Ray florets  $\pm 10$ , *minute* (hardly exceeding their styles), *yellow*; awns 5-6, *densely barbed along their whole length* (procumbent scabrid annual <1 ft. high, often <4", widespread throughout Mallee & Wimmera):

*C. hispidula* (F. Muell.) F. Muell. in *Trans. Vict. Inst.* 130 (1855).

*Cheioloma hispidulum* F. Muell. in *Linnaea* 25: 401 (1853).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 117, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1159 N (1957); Davis, *Proc. Linn. Soc. N.S.W.* 77: 160 fig. 35-40 (1952); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 15 n. 355 (1965); Hayward & Druce, *Advent. Flor. Tweedside* 86 (1919).

*Vern.*: Hairy Burr-daisy (Bogan-flea). *Distr.*: ABCFHJM—also S.A., N.S.W., Qd, Cent. Aust.

3. Leaves basal, *finely divided* (bipinnatisect); ray florets 50-70, white, conspicuous; achenes with rigid *wing-like margins*; awns 7-14, slightly unequal, barbed (glabrous, stoloniferous perennial, scattered on open grassy plains of W., N.W., & nearer N.E.):

*C. anthemoides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 44 (1855).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 77: 187 fig. 143-145 (1952); Burbidge, *Flor. Aust. Cap. Terr.* fig. 365 (1970).

*Vern.*: Cut-leaf Burr-daisy. *Distr.*: ACDHJMNPR—also N.S.W., A.C.T.

- Leaves *never* bipinnatisect (but sometimes pinnatifid); achenes *wingless*

4. Ray florets *yellow*; plant *not stoloniferous*, erect or straggling and much branched

Ray florets *white or mauve*; plant *stoloniferous*

5. Leaves in *basal clusters*, usually *entire*, *linear to linear-lanceolate*,  $\pm$  *glabrous*; ray florets <6 mm. long; achene *glabrous*; awns 4-6, almost *equal* (heavy damp soils of plains from Melbourne to Goulburn Valley, Dimboola and far N.W.):

*C. scapigera* Hook. in *Mitch. J. Exped. trop. Aust.* 75 (1848).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 118, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1159 I (1957); Davis, *Proc. Linn. Soc. N.S.W.* 77: 177 fig. 112-119 (1952).

*Vern.*: Tufted Burr-daisy. *Distr.*: ACKLMNP—also S.A., N.S.W., Qd, N. Terr.

- Leaves chiefly radical but *extending on to scapes*, often toothed, *oblanceolate to elliptic* (sometimes linear), shortly *hairy*; ray florets >7 mm. long; achene  $\pm$  *hairy*; awns 5-10, very *unequal* (scattered almost throughout State, except far S.W.):

*C. scabiosifolia* Sond. & F. Muell. in *Linnaea* 25: 471 (1853).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 117, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1159 H (1957); Davis, *Proc. Linn. Soc. N.S.W.* 77: 172 fig. 85-94 (1952), also fig. 95-100 (var. *integrifolia*); Wawra, *Itin. Princ. Saxe-Coburg* 2: 8 (1888).

*Vern.*: Rough Burr-daisy. *Distr.*: ABCGHJMNVPVWZ—also S.A., N.S.W., A.C.T., Qd.

[In Ewart's *Flor. Vict.* 1104 (1931) four Muellerian varieties of *C. scabiosifolia* are recognized—viz. *lasiocarpa*, *pubescens*, *integrifolia* and *elongata*. The only one of these adopted by Davis in her "Revision of the Genus *Calotis* R. Br.", *Proc. Linn. Soc. N.S.W.* 77: 173 (1952), is var. *integrifolia* F. Muell. ex Benth. *Flor. aust.* 3: 503 (1867); this differs from the typical South Australian form in having almost entire, mostly linear radical leaves and the body of the achene with long appressed hairs toward centre. Both forms occur in Victoria, the var. *integrifolia* being confined to eastern and usually montane districts. Under the latter variety Davis (*l.c.*) synonymized var. *lasiocarpa* F. Muell. ex Benth. *ibid.*]

6. Ray florets <4 mm. long; achene tuberculate, with 2 erect major awns and 3-6 smaller  $\pm$  horizontal awns; leaves <1.5 cm. long (plant of rocky places, chiefly in E. Gippsland, but also Bacchus Marsh, Nathalia & far N.E.):

*C. lappulacea* Benth. in Endl. et al. *Enum. Plant. Hueg.* 60 (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1159 F (1957); Davis, *Proc. Linn. Soc. N.S.W.* 77: 172 fig. 70-79 (1952); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 126 (1906); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 155 (1901).

*Vern.*: Yellow Burr-daisy. *Distr.*: AMNVWZ—also W.A., S.A., N.S.W., A.C.T., Qd, N. Terr., N.Z.

—Ray florets >4 mm. long; achene with either 2 divaricate awns or several (to 9) unequal spreading awns (plants of sandy tracts in Mallee, the oblong to linear leaves 1-5 cm. long) 7

7. Plant glabrous or almost so, 1-3 ft. high; body of achene smooth; awns variable, 2-9 (frequent, much branched perennial):

*C. erinacea* Steetz in Lehm. *Plant. Preiss.* 1: 424 (1845).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 143, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1159 D-E (1957); Davis, *Proc. Linn. Soc. N.S.W.* 77: 166 fig. 42-56 (1952).

*Vern.*: Tangled Burr-daisy. *Distr.*: ABFM—also W.A., S.A., N.S.W., Qd, Cent. Aust.

[Size of heads and number of awns on the achene are so variable in *C. erinacea* that it is impossible to recognize the var. *parviflora* Benth. *Flor. aust.* 3: 503 (1867).]

—Plant hairy, seldom exceeding 1 ft. in height; body of achene tuberculate; awns always 2, broadly united at the base to form a conspicuous boat-shaped structure (rare annual of Wyperfeld Nat. Park, Pine Plains, Underbool & Ouyen districts):

*C. cymbacantha* F. Muell. in *Linnæa* 25: 400 (1853).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 77: 166 fig. 57-69 (1952); Black, *Flor. S. Aust.* ed. 2: fig. 1159 C (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 15 n. 353 (1965); Mueller, *Key Syst. Vict. Plants* 2: fig. 80 (1886); Mueller, *Plants indig. Colon. Vict.* t. 36 (1864-65).

*Vern.*: Burr-daisy. *Distr.*: B—also W.A., S.A., N.S.W., Cent. Aust.

[In *Flor. Vict.* 1102 & 1103 (1931) Ewart admits as Victorian the two other species *C. glandulosa* F. Muell. in *Trans. Vict. Inst.* 129 (1855) and *C. microcephala* Benth. *Flor. aust.* 3: 504 (1867); but there are no authentic specimens from this State in Melbourne Herbarium. The former, of south-eastern tablelands in New South Wales, certainly approaches Victoria closely in the region of Mt. Kosciusko and Upper Snowy River, but evidence is so far lacking of its occurrence across the Victorian border; this blue-flowered species has affinities with *C. cuneifolia*, differing in the more densely tuberculate achenes with relatively narrower apical scales. The latter, for which the correct name is now *C. porphyroglossa* F. Muell. ex Benth. *l.c.* 505 (1867), is not known from anywhere nearer to Victoria than Lake Eyre (S.A.), and Ewart's recording was doubtless the result of misidentifications; the distinguishing features are a *broadly winged ciliate achene*, bearing 6-11 strongly barbed awns, and this hairy bluish-flowered annual inhabits arid grassland.]

### \*ASTER L. (1753)

\**A. subulatus* Michx. *Flor. Bor.-Amer.* 2: 111 (1803).

*A. squamatus* sens. Ewart *Flor. Vict.* 1106 (1931), *non certe* Hieron. ex Sod. (1895).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 114, *col.* (1965); Fernald & Griscom, *Rhodora* 37: t. 351 (1935); Maiden, *Weeds N.S.W.* t. opp. 86, *col.* (1920); Maiden, *Agric. Gaz. N.S.W.* 28: t. *col.* opp. 133 (1917); Bailey, *Qd agric. J.* new ser. 4: 227 (1915); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 433 (1913); Burbidge, *Flor. Aust. Cap. Terr.* fig. 360 (1970).

*Vern.*: Aster-weed (Shrub Aster). *Distr.*: CEJKLMPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

[*A. novi-belgii* L. (New York Aster) is a glabrous N. American perennial 2-3 ft. tall, with many garden varieties (and hybrids) that are grown extensively in Victoria. It thrives in damp soils, multiplying by offshoots, and may occasionally escape where garden refuse has been deposited; a colony has become locally naturalized against the lake at Mt. Beauty (N.E. highlands). The many blue- to violet-rayed heads in large corymbose panicles are very showy.]

### ERIGERON L. (1753)

Plant *sprawling*, suffruticose, *much branched*, with leafy  $\pm$  wiry stems; leaves *elliptic-lanceolate*, *pointed*, often with a callous mucro, *shortly petiolate*; peduncles *numerous*, very slender, almost naked; phyllaries much  $<0.5$  mm. broad (occasional escape from gardens and rockeries):

\**E. mucronatus* DC. *Prodr.* 5: 285 (1836).

*Illust.*: Black, *Naturalised Flor. S. Aust.* 82 (1909); Hay & Synge, *Dict. gdn Plants* t. 64, *col.* (1969); Fyson, *Flor. Nilgiri & Pulney Hill-tops* 3: 379 (1920); Bailey, *Cycl. Amer. Hort.* 1957 (1902); *Garden* 78: 77 (1914).

*Vern.*: Bony-tip Fleabane. *Distr.*: JN—also Tas., ?S.A.

Plant quite *herbaceous*,  $\pm$  *rosetted*, rhizomic, *not* or hardly branched; leaves *oblanceolate*, very *blunt*, *long-petiolate*; peduncles *few* (1-4), *bracteate*;

phyllaries mostly >0.5 mm. broad; pappus creamy; achenes glabrous (widespread through alps and subalps, from Lake Mountain to the Cobberas):

*E. pappocroma* Labill. *Nov. Holl. Plant. Specim.* 2: 47, t. 193 (1806)—*etymol. orig.*

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 499, col. (1968); Fitch in Hooker f., *Flor. Tasm.* 1: t. 46 fig. B, col. (1856), as *E. Gunnii*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 356 (1970), as *E. pappochroma* var.

*Vern.*: Violet Fleabane. *Distr.*: RSVW—also Tas., N.S.W., A.C.T.

[Most, if not all, Victorian populations are referable to the var. *gunnii* (Hook. f., ut *Aplopappus* sp.) Benth. *Flor. aust.* 3: 494 (1867), differing from the typical (Tasmanian) form in its softly hairy, less distinctly toothed leaves and stouter scapes.

Ewart, *Flor. Vict.* 1107 (1931), included both *E. minurioides* Benth. *Flor. aust.* 3: 495 (1867)—as “a doubtful species based on a single specimen from Port Phillip”—and *E. conyzoides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 105 (1855), with the note “N.E. Victoria and rare; near the mouth of the Snowy River”. As to the former, even Bentham expressed uncertainty in assigning his “new” species to *Erigeron*. Examination of type material reveals that *E. minurioides* is, without doubt, identical with the South African *Felicia tenella* (L.) DC.—probably the old Melbourne specimen had been picked from a garden. The only presumptive Victorian specimen of *E. conyzoides* extant in Melbourne Herbarium is labelled “Snowy River (towards the mouth)” and was collected by Mueller in Feb.-Mar. 1854. Since this species is otherwise exclusively montane to subalpine (4-5000 ft.) in N.S.W., it would appear that some erroneous transposition of field labels had occurred, and the species is deliberately omitted from this handbook. *E. conyzoides* is an almost glabrous perennial to 2 ft., with entire leaves 2-3” long and white-rayed heads in panicles.]

### \*CONYZA Lessing (1832)

1. Fruiting-heads (incl. pappus)  $\pm 2$  cm. diam., relatively few in terminal and axillary cymes; receptacle 6-10 mm. diam.; ray florets without ligules; plant coarsely and densely hairy,  $\pm$  scabrid; leaves oblanceolate, crenately toothed, the basal ones 6-8” long (erect perennial herb to 2 ft., from E. suburbs of Melbourne to Dandenong Ranges but uncommon):

\**C. scabiosifolia* Remy in C. Gay *Hist. fil. pol. Chile (Flor. Chile)* 4: 72 (1849).

*Vern.*: Rough Conyza. *Distr.*: N—also Tas.

—Fruiting-heads (incl. pappus) <1.5 cm. diam. (mostly <1 cm.), numerous in large terminal panicles; receptacle <3 mm. diam.; ray florets minutely ligulate; plant finely hairy to glabrescent (annuals 1-6 ft. tall, with entire to slightly toothed leaves) 2

2. Phyllaries and foliage conspicuously hairy; leaves oblong to narrowly

*oblanceolate*; receptacle  $\pm$  2 mm. diam.; ligules minute, sometimes purplish (frequent weed throughout State, excepting alps):

\**C. bonariensis* (L.) Cronquist in *Bull. Torrey bot. Cl.* 70: 632 (1943).

*Erigeron bonariense* L. *Spec. Plant.* 2: 863 (1753);

*E. linifolium* Willd. *Spec. Plant.* 3: 1955 (1803).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5656 (1960); Black, *Flor. S. Aust.* ed. 2: fig. 1163 (1957), as *Erigeron bonariensis*; Leigh & Mulham, *Pastoral Plants Riverine Plain* 126, col. (1965), as *E. bonariensis*; Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: 144 fig. 2 (1940), as *E. crispus*; Cabrera, *Revta Mus. La Plata nueva ser.* 4 (Bot.): 87 & 89 (1941), as *E. bonariensis*; Bailey & White, *Qd agric. J.* new ser. 4: 229 (1915), as *E. linifolius*; Reichenbach, *Icon. Flor. germ.* 16: t. 913 fig. II, col. (1853), as *E. linifolius*.

*Vern.*: Tall Fleabane. *Distr.*: ABDFHJKLMNPRSTVWZ—also S.A., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

[The very similar but usually taller *C. floribunda* Humb. et al. occurs in N.S.W. & Tas. and has probably been overlooked in Victoria; it differs from *C. bonariensis* in branching only *within* (not below) the inflorescence, in the phyllaries being chestnut-brown (not whitish) inside and the pappus straw-coloured. An illustration is given by Burbidge in her (and Gray's) *Flor. Aust. Cap. Terr.* fig. 359 (1970).]

—Phyllaries (and usually foliage) *glabrous* or nearly so; leaves *linear*; receptacles 1.5 mm. diam. or less; ligules  $\pm$  1 mm. long, white (scattered through cooler E. & N.E. districts, also Otways & Inverleigh):

\**C. canadensis* (L.) Cronquist in *Bull. Torrey bot. Cl.* 70: 632 (1943).

*Erigeron canadense* L. *Spec. Plant.* 2: 863 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5657 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1269 (1961); Ross-Craig, *Drawings Brit. Plants* 15: t. 8 (1960); Bailey & White, *Qd agric. J.* new ser. 4: 228 (1915); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 260 fig. 1, col. (1915); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1385, col. (1922); Cary in Beck, *First Book of Weeds* 23 (1963)—all but the first as *Erigeron canadensis*.

*Vern.*: Canadian Fleabane. *Distr.*: DHNPRSTVWZ—also W.A., S.A., N.S.W., Qd, N.Z.

#### VITTADINIA Lesson & A. Rich. (1832)

1. Flowering stems stout, *simple*; involucre 10-15 mm. long, surrounding a *large flower-head* that expands to 4 cm. wide in fruit; achenes *flat and smooth* on each face, with conspicuously *thickened margins* (coarse, densely white-hirsute plant of W. Mallee between Dimboola & N. boundary of Wyperfeld Nat. Park.):

*V. megacephala* (F. Muell. ex Benth.) J. M. Black in *Proc. roy. Soc. S. Aust.* 52: 229 (1928).

*V. australis* Lesson & A. Rich. var. *megacephala* F. Muell. ex Benth. *Flor. aust.* 3: 491 (1867).

*Vern.*: Giant New Holland Daisy. *Distr.*: BC—also S.A., ? Tas.

—Flowering stems *branched*; involucre 6-9 mm. long, the flower-head never expanding beyond  $\pm 2$  cm. in fruit; achenes *ribbed or manifestly striate* on each face 2

2. Foliage, stems and apices of bracts invested with soft *white woolly hairs*; leaves *narrowly cuneate*, often entire; achenes shortly and sparsely pubescent (widespread in Mallee, Murray & Goulburn Valleys, N.E., and Keilor basalt plains near Melbourne):

*V. cuneata* DC. *Prodr.* 5: 281 (1836).

*V. triloba* (Gaudich.) DC. var. *lanuginosa* J. M. Black *Flor. S. Aust.* 595 (1929).

*Illust.*: Burbidge, *Proc. Linn. Soc. N.S.W.* 93: 441 fig. 1b (1969)—achene only; Burbidge, *Flor. Aust. Cap. Terr.* fig. 357 (1970); Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 246, col. (1968), as *V. triloba*.

*Vern.*: Woolly New Holland Daisy. *Distr.*: BCGMNRV—also S.A., Tas., N.S.W., A.C.T.

—Foliage, stems and bracts  $\pm$  *scabrid with upwardly curved setæ*, sometimes almost glabrous 3

3. Leaves *cuneate to spatulate* with short *broad lobes*, rather *densely scabrid*; involucral bracts  $\pm$  *acuminate, coarsely hairy*; ligules 20-40, mostly pale blue (dispersed almost throughout State):

*V. triloba* (Gaudich.) DC. *Prodr.* 5: 281 (1836).

*Brachycome triloba* Gaudich. in Freyc. *Voy. aut. Monde (Bot.)* 467 (1830).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1164 (1957); Lee, *Wild Life (Melb.)* 12: 441 (1950); Burbidge, *Proc. Linn. Soc. N.S.W.* 93: 441 fig. 1 A (1969)—achene only.

*Vern.*: Common New Holland Daisy. *Distr.*: ABCDEFHJMNPRVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust.

[The var. *dissecta* (Benth.) J. M. Black *Flor. S. Aust.* 595 (1929) has the 3 leaf-lobes divided again into blunt segments, and petioles are very slender; it is frequent in Victoria, especially through the Mallee.]

—Leaves *narrow-linear* with *narrow acuminate lobes*, sparsely but *coarsely bristly* to almost glabrous; involucral bracts *bluntish, finely glandular* to glabrescent but with  $\pm$  *penicillate tips*; ligules 15-20, usually deep blue; achene with appressed basal hairs which *grade into slender clavate hairs growing between the ribs*; stems glandular but *without septate hairs* (low, densely branched plants with long peduncles far exceeding the foliage; scattered in N., N.E., & far E. districts, often in rocky places):

*V. muelleri* N. T. Burbidge in *Proc. Linn. Soc. N.S.W.* 93: 440, 441 fig. 1 D (1969).

*Illust.*: Burbidge (*l.c.*).

*Vern.*: Narrow-leaf New Holland Daisy. *Distr.*: MNVW—also Tas., N.S.W., A.C.T.



—As for the last, but achene (except at extreme base) *glabrous in lower third, bearing short clavate hairs above along the 6-7 prominent ribs, and stems having septate hairs in mixture with the glandular pubescence* (apparently a rare plant of N.W. Mallee):

*V. blackii* N. T. Burbidge in *Proc. Linn. Soc. N.S.W.* 93: 442, 441 fig. 1 E (1969).

*V. tenuissima* sens. J. M. Black quoad descr. *Flor. S. Aust.* ed. 2: 865 (1957), non *V. australis* Less. & A. Rich. var. *tenuissima* Benth. *Flor. aust.* 3: 491 (1867).

*Illust.*: Burbidge (*l.c.*).

*Vern.*: Western New Holland Daisy. *Distr.*: BFG—also W.A., S.A., N.S.W.

### CELMISIA Cass. (1825)

Leaves *straight, ± rigid, perennial*, often narrow-linear, becoming *green and glabrous* above but with a permanent *close web* of silvery-white flexuose hairs beneath; bracts *glabrescent*, at least at the tips; achenes 7-10 mm. long, exceeding the pappus at maturity (widespread through alps of E. highlands, in grassy places above 4500 ft., also in the Grampians above 3500 ft.):

*C. asteliifolia* Hook f. *Flor. antarct.* 1: 35 (1844).

*C. longifolia* sens. auctt. Aust., non Cass. in *Dict. Sci. nat.* 37: 259 (1825).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 498 & 500, col. (1968); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 3, col. (1962); McCann, *Vict. Nat.* 78: 5 (1961); Sourry, *Aust. Wild Life* 4<sup>1</sup>: 12 (1962); Mass, *Flowers aust. Alps* 11 (1967); Sulman, *Wild Flowers N.S.W.* 2: t. 41 (1914); Nicholls, *Wild Life (Melb.)* 3: 281 (1941); Burbidge, *Flor. Aust. Cap. Terr.* fig. 355 (1970); Morcombe, *Aust. Wildflowers* t. on [23], col. (1970)—all as *C. longifolia*.

*Vern.*: Silver or Snow Daisy. *Distr.*: DJRSVW—also Tas., N.S.W., A.C.T.

[In *N.Z. J. Bot.* 7<sup>4</sup>: 397-98 (1969), D. R. Given shows that *C. longifolia* Cass. (the genotype) is endemic in the Blue Mtns., N.S.W., and he assigns all other S.E. Australian populations (excepting *C. saxifraga* of Tas. and *C. sericophylla* of Vic.) to the widespread variable *C. asteliifolia* Hook f. This species differs from *C. longifolia* in its much *longer* (7-10 mm.) *hairy* achenes and relatively *shorter* terminal papillose part of the style-arms in disk florets—only half the length of the glabrous portion.

A Victorian population, described as *C. longifolia* var. *latifolia* F. Muell. ex Benth. *Flor. aust.* 3: 489 (1867), is distinguished by its broader oblanceolate leaves—to 40 cm. long and 2-3 cm. wide. It occurs in the Mt. Wellington, Mt. Howitt & Mt. Speculation areas.]

Leaves *drooping, flaccid, renewed annually*, oblanceolate-linear, both surfaces covered with a *thick permanent vestiture* of straight, *forwardly appressed silky hairs*; bracts *densely villous* outside; achenes 5-6 mm. long, hardly longer than pappus when mature (apparently endemic on the Bogong High

Plains. forming tussocks along rocky stream-banks and overhanging the water, at altitudes of 5500 ft. and higher):

*C. sericophylla* J. H. Willis in *Vict. Nat.* 70: 223, t. 22 (1954).

*Illust.*: Willis (*l.c.*); Willis, *Vict. Year Book* 76: t. inter 18 & 19 (1962); Williamson in Garnet, *Vict. Nat.* 76: 107 (1959), also *ibid* 40: t. 6 fig. 1 (1923), as *C. longifolia* var. *latifolia*.

*Vern.*: Silky Daisy. *Distr.*: V.

### OLEARIA Moench (1802)

1. Indumentum consisting of a viscid exudation *or* of simple hairs (either cottony or bristly); leaves usually <1" long (except in swamp-loving *O. glandulosa*, coastal *O. glutinosa*, rare montane *O. adenophora* and Mallee *O. picridifolia*—all with linear foliage), often revolute at margins, *sessile* or the short petiole  $\pm$  winged and stem-clasping, *obscurely veined* 16  
Indumentum of stellate or bifid *or* centrally attached hairs; leaves rarely <1" long (usually >1"), typically flattish, *petiolate* and *distinctly veined* 2
2. Hairs on under-surface of leaves *stellate* and either sessile or stalked, loose or dense (and then  $\pm$  mealy) but never appressed and silvery 11  
Hairs on under-surface of leaves *bifid or centrally attached*, either appressed longitudinally (giving leaves a silvery sheen) or  $\pm$  loose; ligules of ray florets always white 3
3. Stem-leaves *alternate*, <3" long 6  
Stem-leaves mostly *opposite, all entire*, the largest 2-5" long 4
4. Leaves *lanceolate, thin*, silvery underneath; florets 4-6 of which only 1-2 are ligulate; heads small but numerous in corymbose panicles (viscid coastal shrub 3-6 ft. high, around Gippsland Lakes also at Freestone Ck):

*O. viscosa* (Labill.) Benth. *Flor. aust.* 3: 468 (1867).

*Aster viscosus* Labill. *Nov. Holl. Plant. Specim.* 2: 53, t. 203 (1806).

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Daisy-bush. *Distr.*: W—also Tas.

—Leaves *elliptical to oblong, thick, leathery*; ligulate florets several (tall shrubs of E. highlands) 5

5. Leaves 5-12 mm. wide, the upper surface *not* or hardly reticulated, the under-side covered with a *thick white appressed mat* which obscures the lateral veins, ray florets 4-6 (scattered from Mt. Wellington to Dargo High Plains, Giibo Range, Cobberas, Bonang & Mt. Ellery):

*O. alpicola* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 468 (1867).

*Eurybia alpicola* F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 229 (1858).

*Vern.*: Daisy-bush. *Distr.*: SVWZ—also N.S.W.

- Leaves 13-70 mm. wide, with upper-surface *reticulated* and under-side *grey- or rusty-felted*, the lateral veins *apparent*; ray florets 7-12; flower-heads rather large and numerous in a terminal corymb (wide-spread E. & N.E. from Matlock, locally abundant after bushfires and the young growth  $\pm$  reddish):

*O. megalophylla* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 467 (1867).

*Eurybia megalophylla* F. Muell. in *Pap. roy. Soc. Van Diemen's Land* 3: 228 (1858).

*Illust.*: Mass, *Flowers aust. Alps* 17 (1967).

*Vern.*: Daisy-bush. *Distr.*: RSVWZ—also N.S.W., A.C.T.

6. Flower-heads *numerous, narrow*; leaves lanceolate, oblong or obovate, the reticulate venation *prominent and  $\pm$  raised* on upper surface, the margins normally with callous toothing 8  
 Flower-heads *few,  $\pm$  hemispherical*; involucre to 1" diam., on a *long thick peduncle*; leaves *broadly ovate*, leathery, 1-3" long, loosely tomentose beneath, the reticulate venation *impressed* on upper surface 7
7. Leaves *entire*, their upper surfaces *glabrous*; peduncles *finely tomentose*, often 2-5" long; phyllaries narrowly lanceolate, *densely tomentose*; ligulate florets white, up to 1" long (very rare sprawling shrub of 1-4 ft. high, in Wedderburn, Heathcote, Brisbane Ranges and Angelsea districts):

*O. pannosa* Hook. *Icon. Plant.* 9: sub t. 862 (1852).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 81 (1886), as *Aster pannosa*; Mueller, *Plants indig. Colon. Vict.* t. 32 (1864-65), as *Eurybia pannosa*.

*Vern.*: Velvet Daisy-bush. *Distr.*: HMNP—also S.A., N.S.W.

- Leaves  $\pm$  *sinuate-toothed*, their upper surfaces *scabrid or pubescent*; peduncles *coarsely brownish-tomentose*, usually <2" long; phyllaries ovate-lanceolate, *glabrescent* except at tips (uncommon near-coastal shrub 3-6 ft. high, in Howe Ranges):

*O. dentata* (Andr.) Moench *Meth. Plant. Suppl.* 254 (1802).

*Aster dentatus* Andr. *Bot. Repos.* 1: t. 61, col. (1799).

*Illust.*: Andrews (l.c.); Hösel, *Wildflowers S.-E. Aust.* 65, col. (1969); Sulman, *Wild Flowers N.S.W.* 2: t. 39 (1914); Fitch in *Curtis's bot. Mag.* 98: t. 5973, col. (1872).

*Vern.*: Daisy-bush. *Distr.*: Z—also N.S.W.

8. Plant a tree 10-30 ft. high; leaves ovate-elliptic to broadly lanceolate, the largest 3-5" long, acute,  $\pm$  callous-denticulate, with an extremely thin *appressed silvery vestiture* underneath; heads *very numerous* in large branched corymbose panicles; ligulate florets 3-5 (frequent component of mountain-gully vegetation throughout E. highlands, more restricted in W. highlands—Macedon, Lerderberg & Otway Ranges, Stony Rises near Colac & Tower Hill):

**O. argophylla** (Labill.) Benth. *Flor. aust.* 3: 470 (1867).*Aster argophyllus* Labill. *Nov. Holl. Plant. Specim.* 2: 52, t. 201 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 456, col. (1968); White-Honey in Ewart, *Handb. For. Trees* t. 222 (1925); *Curtis's bot. Mag.* 38: t. 1563 col. (1813), as *Aster argophyllus*; Meredith, *Bush Friends Tasm.* last ser.: t. opp. 66 (1891)—as *A. argophyllus*.  
*Vern.*: Musk Daisy-bush. *Distr.*: EJKNPSTVWZ—also Tas., N.S.W., A.C.T.

—Plant a shrub <4 ft. high; leaves mostly <3" long; individual inflorescences usually *few-headed* 9

9. Flower-heads *shortly pedunculate in close-clusters*; florets 4-8 of which only 2-3 are ligulate; leaves normally *obovate* with the apex *rounded*, mostly 0.5-1.5 cm. long, the vestiture underneath gummed into a solid mat (hilly districts throughout State, often on rocky ground):

**O. myrsinoides** (Labill.) F. Muell. ex Benth. *Flor. aust.* 3: 470 (1867).*Aster myrsinoides* Labill. *Nov. Holl. Plant. Specim.* 2: 53, t. 202 (1806).

*Illust.*: Labillardière (*l.c.*); Raffill in *Gdnrs' Chron.* ser. 3, 45: 213 fig. 92 (1909), also *ibid.* 49: 59 (1911); *Garden* 76: 320 (1912).

*Vern.*: Silky Daisy-bush. *Distr.*: CDEJMNPRSTVWZ—also Tas., N.S.W., A.C.T.

[A form near Daylesford and in the Brisbane Ranges has exceptionally large leaves (to 5 × 2 cm.).]

—Flower-heads ± loose and *long-pedunculate*; florets >8 of which 4-8 are ligulate; leaves *lanceolate or oblong*, usually *acute* and mostly >2 cm. long 10

10. Leaves ± oblong, mostly 1-2" long, 2-10 mm. wide, often holly-like or almost pinnatifid with *spiny-denticulate lobes*; inflorescences usually of 1-3 heads (sometimes to 6), the individual peduncles 1-5 cm. long; bracts *narrowly acute*; young shoots ± reddish (widespread throughout E. highlands, also Otways and Grampians):

**O. erubescens** (DC.) Dippel *Handb. Laubholz.* 1: 290 (1889).*Eurybia erubescens* DC. *Prodr.* 5: 267 (1836).

*Illust.*: Schneider, *Ill. Handb. Laubh.* 2: 757 (1911); Garnet, *Wildflowers Wilson's Prom.* fig. 823 (1971).

*Vern.*: Daisy-bush. *Distr.*: DJKNPRSVWZ—also S.A., Tas., N.S.W., A.C.T.

—Leaves ovate-lanceolate to narrowly oblong, 2-3" long, 10-30 mm. wide, the margins denticulate (rarely subentire); individual inflorescences usually *several-headed*, ± racemose, the ultimate peduncles usually short and uppermost heads often sessile; bracts *broadly acute*, tomentose (scattered in far S.W., Grampians, Dandenongs, Matlock, Mt. Wellington, Mt. Buffalo & Mt. St. Bernard):

**O. speciosa** Hutchinson in *Curtis's bot. Mag.* 133: t. 8118, col. (1907).

*Illust.*: Fitch in Hutchinson (*l.c.*).

*Vern.*: Daisy-bush. *Distr.*: DEJNRSW.

11. Leaves obovate, entire or the apical part  $\pm$  sinuate-toothed, *both surfaces densely stellate-pubescent* (the upper minutely cracked and tessellated beneath the indumentum); flower-heads *solitary, terminal*, the involucre  $>2$  cm. wide; bracts *tomentose both inside and outside*; ligulate florets usually 40-50, *mauve* and spectacular (low endemic alpine shrub of Bogong High Plains, Mt. Hotham, Barry Mtns. & Mt. Stirling):

*O. frostii* (F. Muell.) J. H. Willis in *Muelleria* 1: 31 (1956).

*Aster frostii* F. Muell. in *Vict. Nat.* 6: 167 (1890).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 502, col. (1968); Stones in *Curtis's bot. Mag.* 176: new ser. t. 521, col. (1968); Bishop, *Wild Life (Melb.)* 3: 281 (1941).

*Vern.*: Bogong Daisy-bush. *Distr.*: SV.

—Leaves glabrous, scabrous or  $\pm$  pubescent on the upper surface; flower-heads usually in *small panicles* (sometimes solitary), the involucre  $<2$  cm. wide; bracts *glabrous* on the inner surfaces; ray florets usually  $<30$  12

12. Lateral veins of leaf *not developed*; leaves oblong to broad-linear, 1.5-4 cm.  $\times$  1.5-6 mm., entire or bluntly sinuate-toothed, revolute at margins, both sides (also branchlets and peduncles) invested with *long-stalked stellate hairs* that are looser on upper surfaces; flower-heads relatively large, often solitary, on peduncles longer than leaves; ligules 12-24, *blue or mauve* (slender erect shrub 3-5 ft. high, scattered on damper southern heathlands from Lower Glenelg R. to Malla-coota):

*O. asterotricha* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 473 (1867).

*Eurybia asterotricha* F. Muell. *Fragm. Phyt. Aust.* 1: 111 (1859).

*Illust.*: Hösel, *Wildflowers S.-E. Aust.* 66, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 160 (1967); Mueller, *Plants indig. Colon. Vict.* t. 33 (1864-65), as *Eurybia astrotricha*.

*Vern.*: Daisy-bush. *Distr.*: DEJNPSTZ—also N.S.W.

[The var. *parvifolia* Benth. *Flor. aust.* 3: 473 (1867) from far S.W. Victoria has leaves mostly  $<1.5$  cm. long, but is otherwise quite similar to typical material from the Grampians & Dandenongs and hardly warrants recognition.]

—Lateral veins of leaves normally *apparent*; leaves often  $>6$  mm. wide, densely white-felted or brownish-tomentose beneath, stalked stellate hairs sometimes present but *not* conspicuous; flower-heads never simultaneously solitary and with bluish ligules (normally white-rayed) 13

13. Leaves broadly ovate or ovate-lanceolate, mostly 3-6 cm. long and 1-3 cm. wide; upper surfaces *deeply and bullately wrinkled, very scabrid*; under-surfaces *boldly reticulate* and invested with a loose covering of *coarse brownish hairs*; margins coarsely sinuate-dentate or lobed; flower-heads *paniculate*, on peduncles 1-3 cm. long; achenes *hairy* (scattered in montane forests of E. highlands where endemic):

*O. rugosa* (F. Muell. ex Archer) Hutchinson in *Gdnrs' Chron.* ser. 3, 61: 3 (1917).

*Eurybia rugosa* F. Muell. ex Archer in *J. Linn. Soc. (Bot.)* 5: 22 (1860);

*O. quercifolia* sens. Ewart *Flor. Vict.* 1113 (1931), non Sieber ex DC. (1836).

*Vern.*: Wrinkled Daisy-bush. *Distr.*: NSTWZ.

—As for the last but leaves only 1-3 cm. long and up to 1 cm. wide, the upper surfaces *shining* and under surfaces covered with a *fine mat of minute whitish stellate hairs*, heads mostly *solitary* in axils of upper leaves which they hardly exceed, and achenes *glabrous* (endemic in Gippsland, at Wilson Promontory and Cicada Trail between Mueller & Wingan Rivers):

*O. allenderæ* J. H. Willis in *Muelleria* 1<sup>3</sup>: 156 (1967).

*Vern.*: Promontory Daisy-bush. *Distr.*: TZ.

—Leaves oblong to lanceolate, either <3 cm. long or several times as long as wide; upper surfaces *not* bullate; under surfaces *hardly reticulate*, invested with a dense mat of minute grey, whitish or yellowish hairs

14

14. Leaves *narrow-lanceolate* to almost linear, the larger ones 3-5" long and 0.5-1" wide; margins entire or slightly and obscurely callous-toothed; upper surfaces light green, usually *smooth and shiny*; flower-heads *numerous, shortly stalked*, in leafy, erect and chiefly terminal panicles; rays white, exceptionally blue or purple (widespread in mountain forests and fern-gullies, E. & N.E. from Port Phillip, but more restricted in W. highlands—Macedon, Lerderderg & Otway Ranges):

*O. lirata* (Sims) Hutchinson in *Gdnrs' Chron.* ser. 3, 61: 14 fig. 4 (1917)—ut *O. "lyrata"* in err.

*Aster liratus* Sims in *Curtis's bot. Mag.* 37: t. 1509, col. (1812).

*Illust.*: Hutchinson (*l.c.*); Edwards in Sims (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 459, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 80, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 159 (1967); White-Honey in Ewart, *Handb. For. Trees* t. 223 (1925), as *O. lyrata*; Fitch in Hooker f., *Flor. Tasm.* 1: t. 43, col. (1856), as *Eurybia lirata*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 358 (1970); Garnet, *Wildflowers Wilson's Prom.* fig. 825 (1971).

*Vern.*: Snowy Daisy-bush. *Distr.*: JKNPRSTVWZ—also Tas., N.S.W., A.C.T.

—Leaves *oblong, dull above*, the largest rarely >0.5" wide; flower-heads *rather few and usually long-stalked*, in manifestly axillary, spreading inflorescences

15

15. Leaves 2-4" long, 7-10 mm. wide, entire or deeply pinnatifid with callous-tipped lobes, the upper surface conspicuously *scabrid and sulcate*, the under-side *distinctly veined* and with a fuzz of coarse yellowish stellate hairs, each  $\pm$  0.2 mm. wide (rare near-coastal shrub):

**O. stellulata** (Labill.) DC. *Prodr.* 5: 272 (1836).

*Aster stellulatus* Labill. *Nov. Holl. Plant. Specim.* 2: 50, t. 196 (1806).

*Illust.*: Labillardière (*l.c.*), also in Hutchinson, *Gdnrs' Chron.* ser. 3, 61: 2 fig. 1 (1917); King & Burns, *Wildflowers Tasm.* 49, col. (1969).

*Vern.*: Daisy-bush. *Distr.*: E (Mt. Clay near Portland)—also Tas., N.S.W., Qd.

—Leaves usually <2" long, entire or with rounded lobes, the upper surface rarely scabrid, usually *flat*, the under-side *obscurely veined* (usually *ashen-grey or whitish*) and bearing a *fine indumentum of densely interwoven small stellate hairs*, each <0.2 mm. wide (widespread variable shrub of E. coasts and highlands, also Otways):

**O. phlogopappa** (Labill.) DC. in *Prodr.* 5: 272 (1836).

*Aster phlogopappus* Labill. *Nov. Holl. Plant. Specim.* 2: 49, t. 195 (1806);

*O. gunniana* (DC., ut *Eurybia* sp.) Hook. f. ex Hook. in *Curtis's bot. Mag.* 78: t. 4638, col. (1852).

*Illust.*: Labillardière (*l.c.*); Fitch in Hooker (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 425, col. (1925); Fitch in Hooker f., *Flor. Tasm.* 1: t. 44, col. (1856), as *Eurybia gunniana*; Hutchinson, *Gdnrs' Chron.* ser. 3, 61: 7 fig. 2 (1917), as *O. gunniana*; Elliott in Harrison, *Handb. Trees & Shrubs S. Hemisph.* 238 (1959), as *O. gunniana*; *Garden* 52: 428 (1897), as *O. gunniana*; Garnet, *Wildflowers Wilson's Prom.* fig. 827 (1971); Morcombe, *Aust. Wildflowers* t. on [22], col. (1970), var. *subrepanda*.

*Vern.*: Dusty Daisy-bush. *Distr.*: DJKNRSTVWZ—also Tas., N.S.W., A.C.T.

[Two distinctive subalpine to alpine populations are the var. *flavescens* (Hutchinson, ut *sp.*) J. H. Willis in *Muelleria* 1: 32 (1956), and var. *subrepanda* (DC., ut *Eurybia* sp.) J. H. Willis *l.c.* The former has thicker longer leaves (1-2") that dry *yellowish beneath*, and longer stouter peduncles; the latter is noteworthy for its *short* (<0.5")  $\pm$  obovate leaves, very short leafy peduncles and often quite solitary heads.]

16. Stems glabrous, glutinous, glandular-pubescent *or* with simple bristles (slightly cottony in the N.W. *O. subspicata*); flower-heads *stalked*, either in terminal bracteate to leafy panicles *or* on stout naked peduncles 25

Stems usually *cottony*, sometimes *also* aculeate with septate bristles and/or with glandular hairs; flower-heads *sessile* *or* on leafy axillary peduncles; leaves *small*,  $\pm$  3 mm. wide or less, their under-surfaces usually *densely cottony* 17

17. Heads usually terminating the branchlets (which may consist of lateral clusters of leaves) *or* on peduncles (sometimes leafy) exceeding the subtending leaf; ligules of ray florets *conspicuous*, much exceeding the involucre 19

Heads *axillary*, *sessile*, each *shorter than* *or* barely exceeding its subtending leaf; ligules of ray florets *obsolete* *or* mostly minute and no longer than the styles; leaf-margins *revolute* 18

18. Leaves *oblanceolate to linear*, usually 1-2 cm.  $\times$  2-4 mm., the under-surfaces (and stems) *densely white-cottony*; involucre bracts usually

brown and with a cottony dorsal patch; ligules of ray florets occasionally well-developed, attaining 4 mm. long (widespread hoary maritime shrub 3-6 ft. tall):

*O. axillaris* (DC.) F. Muell. ex Benth. *Flor. aust.* 3: 475 (1867).

*Eurybia axillaris* DC. *Prodr.* 5: 266 (1836).

*Illust.*: Lee, *Wild Life* (Melb.) 8: 44 (1946); Garnet, *Wildflowers Wilson's Prom.* fig. 821 (1971).

*Vern.*: Coast Daisy-bush. *Distr.*: BEKPTWXZ—also W.A., S.A., Tas., N.S.W., ?N. Terr.

—Leaves *narrow-linear*, <1 cm. long,  $\pm$  1 mm. wide, the under-surfaces (and stems) both cottony and glandular, the upper-sides almost glabrous; involucre bracts greenish and  $\pm$  cottony all over; ray florets reduced, *without ligules* (erect shrub 3-5 ft., scattered through W. auriferous tracts, Grampians and Little Desert):

*O. tubuliflora* (Sond. & F. Muell.) Benth. *Flor. aust.* 3: 475 (1867).

*Eurybia tubuliflora* Sond. & F. Muell. in *Linnæa* 25: 455 (1853).

*Vern.*: Rayless Daisy-bush. *Distr.*: CDHJMN—also S.A., N.S.W.

19. Flower-heads usually *lateral* or on shortened axillary side-branchlets (if ever quite terminal, then sessile and the leaves <2 mm. long); involucre *ovoid*, much <1 cm. wide; ray florets often <10; achenes *glabrous* or sparsely hairy (leaves mostly 2 mm. wide or less, revolute at margins) 21

Flower-head distinctly *terminal*; involucre *hemispherical*,  $\pm$  1 cm. wide; ray florets 10-20; achenes *densely hirsute* (leaves obovate-cuneate, obtuse, 5-10 mm. long, flat or somewhat recurved at margins) 20

20. Branches *densely cottony*; upper-surfaces of leaves *dull*, glabrous or slightly cottony; vestiture of under-surfaces *white, rather loose*; involucre bracts acute, white-woolly toward apices; ligulate florets *white* (very floriferous rounded bush, widespread in sandy Mallee tracts, also at Bacchus Marsh district):

*O. pimeleoides* (DC.) Benth. *Flor. aust.* 3: 479 (1867).

*Eurybia pimeleoides* DC. *Prodr.* 5: 268 (1836).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 163, col. (1968); Anon, *Wild Life* (Melb.) 3: 449 (1941); Rainbow, *Vict. Nat.* 48: 56 (1931).

*Vern.*: Burrobunga (Pimelea Daisy-bush). *Distr.*: ABCFGHJN—also W.A., S.A., N.S.W., Qd.

—Branches *slightly pubescent*; upper-surfaces of leaves *shiny*, often slightly tuberculate toward margins; vestiture of under-surfaces *yellowish, densely matted*; ligulate florets *violet or bluish* (scattered through rocky hills of E. Gippsland where ascending to alps):

*O. iodochoa* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 479 (1867).

*Eurybia iodochoa* F. Muell. *Fragm. Phyt. Aust.* 2: 110 (1860).



*Illust.*: *Wild Flowers Aust.* (Shell Oil Co.) 12 (?1931).

*Vern.*: Daisy-bush. *Distr.*: VWZ—also N.S.W.

[Near Mt. Wallace, at the northern end of the Brisbane Ranges, there occurs a local mauve-headed population that was formerly referred to *O. iodochroa*. However, the broadish leaves are white beneath and revolute at their margins, while the stems bear some septate bristly hairs—features shared by *O. ramulosa*, but not found in *O. iodochroa*. It may, perhaps, have arisen as a result of hybridism between *O. ramulosa* and *O. pimeleoides*, both of which are recorded for adjacent areas (the former on the You Yangs, and latter near Werribee Gorge).]

21. Stems *never bristly*; leaves up to 3 mm. long or, if ever to 5 mm. long (in Mallee), then the *obtuse* involucre bracts tipped with a pubescent or gummy *dorsal thickening* and the 6-10 white ligulate florets 6-8 mm. long

22  
Stems usually  $\pm$  *bristly*; leaves mostly 5-10 mm. long, spreading from erect  $\pm$  flattened petioles, frequently *aculeate-tuberculate*; heads terminating short lateral branchlets or on leafy peduncles; involucre bracts *acutish*; ligulate florets 3-15, usually  $<6$  mm. long (extremely variable, very widely dispersed species, occurring as a sprawling or erect slender shrub 1-9 ft. high):

*O. ramulosa* (Labill.) Benth. *Flor. aust.* 3: 476 (1867).

*Aster ramulosus* Labill. *Nov. Holl. Plant. Specim.* 2: 51, t. 198 (1806).

*Illust.*: Labillardière (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 6, col. (1968); King & Burns, *Wildflowers Tasm.* 51, col. (1969); Galbraith, *Wildflowers Vict.* ed. 3: t. 158 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1165 (1957); Mort in Sulman, *Wild Flowers N.S.W.* 2: t. 40 (1914); Fitch in *Curtis's bot. Mag.* 134: t. 8205, col. (1908), as *O. ramulosa* var. *communis*; *Garden* 34: 534 (1888).

*Vern.*: Twiggy Daisy-bush. *Distr.*: ACDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., ? A.C.T., Qd.

This species is highly polymorphic in Victoria, and the following key may serve to identify the more distinctive variants occurring here—

Ligulate florets 5-10, *white or pale lilac*; white-woolly indumentum sometimes dominant

Leaves 1-10 mm. long; vestiture neither mainly setose *nor* densely woolly

Leaves 2-10 mm. long; vestiture of mixed aculeate bristles and fine appressed woolly hairs, *without glands* but sometimes curry-scented (widespread in State):

var. *ramulosa*.

Leaves 1-2 mm. long, ovate-oblong; vestiture of woolly appressed hairs and a few sessile glands, *without bristles* (rare, in Murray Mallee of far N.W.):

var. *microcephala* (Benth.) J. H. Willis in *Muelleria* 1: 26 (1956).

*O. hookeri* var. *microcephala* Benth. *Flor. aust.* 3: 483 (1867);

*O. hookeri* sens. Ewart *Flor. Vict.* 1116 (1931), *non* (Sond.) Benth. (1867).

Leaves 8-15 mm. long; vestiture predominantly setose or densely white-woolly

Indumentum *principally setose*, but a few glandular and woolly hairs also present; heads shortly stalked and *densely massed* in stiff racemes to 10" long; ligules *white* (rare, restricted to granite hills of N. & nearer N.W.):

var. *rigida* J. H. Willis in *Muelleria* 1: 28 (1956).

Indumentum *white-woolly*, *dense* and quite obscuring the few glands and setæ; heads sessile in terminal spikes 2-3" long; ligules *lilac* (rare, restricted to ranges between Daylesford & Heathcote):

var. *tomentosa* J. H. Willis in *Muelleria* 1: 29 (1956).

Ligulate florets 9-15, *bright blue*; indumentum dominantly glandular or setose

Vestiture principally of *glandular hairs*, mixed with some non-glandular setæ and a little woolly hair (Grampians, Elmhurst, Mt. Buffalo, Mt. Cobbler & Barry Mtns.):

var. *stricta* (Benth.) J. H. Willis in *Muelleria* 1: 27 (1956).

*O. stricta* Benth. *Flor. aust.* 3: 485 (1867).

Vestiture predominantly of *long* (to 1.5 mm.) *bristly hairs* giving plant a hoary aspect, a little woolly hair also present but *no glands* (restricted to Grampians):

var. *longisetosa* J. H. Willis in *Muelleria* 1: 28 (1956).

22. Leaves mostly 2-3 mm. long, in *loose lateral clusters*, *thin*, *narrowed* into a flat but sometimes minute petiole, glabrous or slightly aculeate [in Bendigo district]; flower-heads usually very numerous, sessile or almost so on short lateral branchlets; bracts mostly obtuse, with a *pubescent or gummy dorsal patch* towards apex (scattered through subalps of E. & N.E., also lowlands of W.—from Maryborough & Bendigo districts to Grampians, Little & Big Deserts):

*O. floribunda* (Hook. f.) Benth. *Flor. aust.* 3: 477 (1867).

*Eurybia floribunda* Hook. f. in Hook. *Lond. J. Bot.* 6: 109 (1847).

*Illust.*: *Gdnrs' Chron.* ser. 3, 97: 379 fig. 167 (1935); Comber in *J. roy. hort. Soc., Lond.* 57: fig. 30 opp. 33 (1932); Fitch in Hooker f., *Flor. Tasm.* 1: t. 45 fig. B, col. (1856), as *Eurybia floribunda*.

*Vern.*: Daisy-bush. *Distr.*: ABCDEFHJMNRVWZ—also S.A., Tas., N.S.W., A.C.T.

[A population of the N.W. Mallee (extending widely through S. Aust.) has larger leaves 3-5 mm. long, also fewer and larger flower-heads with more numerous ligules (6-10); it was described by Bentham, *Flor. aust.* 3: 479 (1867), as *O. pimeleoides* var. *minor*. As noted by N. A. Wakefield in *Vict. Nat.* 73: 96 (1956), this is not referable to *O. pimeleoides* at all and is preferably assignable to *O. floribunda*; it may be of hybrid origin.]

—Leaves mostly <2 mm. long, in *dense*, often rosetted lateral clusters, *thick, non-petiolate* (the base broadened)

23. Outer leaves of each cluster <1 mm. long, *reflexed tightly against stem*, almost *globular*, shiny; flower-heads *terminal* on branchlets; involucre bracts *acute*, distinctly pubescent on back (sand-hill country of far W. & N.W. Mallee):

*O. lepidophylla* (Pers.) Benth. *Flor. aust.* 3: 477 (1867).

*Aster lepidophyllus* Pers. *Synops. Plant.* 2: 442 (1807);

*A. microphyllus* Labill. *Nov. Holl. Plant. Specim.* 2: 51, t. 199 (1806), *non* Vent. (1804-05).

*Illust.*: Labillardière (*l.c.*); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 398 (1965).

*Vern.*: Club-moss Daisy-bush. *Distr.*: ABCF—also S.A., Tas., N.S.W.

—Outer leaves of clusters mostly >1 mm. long, *not reflexed* against the stem; flower-heads *lateral* on branchlets, each subtended by a leaf-cluster 24

24. Branchlets *thick, rigid, densely white-tomentose*; leaves usually *cottony*, ± *aculeate-tuberculate*; lower part of heads *immersed* in leaf-clusters; involucre bracts ± *acute*, glandular-pubescent or *cottony* (Mallee sand-hills of Big Desert & Wyperfeld Nat. Park, perhaps also N.W. Grampians):

*O. lanuginosa* (J. H. Willis) N. A. Wakefield in *Vict. Nat.* 73: 96 (1956).

*O. floribunda* (Hook. f.) Benth. var. *lanuginosa* J. H. Willis in *Muelleria* 1: 29 (1956).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 397 (1965).

*Vern.*: Woolly Daisy-bush. *Distr.*: BCDJ—also S.A.

—Branchlets *slender, slightly cottony* to glabrescent; leaves ± *glabrous, smooth and shiny*; heads *superior* to the leaf-clusters; involucre bracts *obtusely glabrous* or nearly so (Boggy tracts of alps and subalps, from Lake Mountain to Mt. Buffalo, Bogongs and Upper Delegate R.):

*O. algida* N. A. Wakefield in *Vict. Nat.* 73: 97 (1956).

*Illust.*: Baglin in Murray, *Alpine Flowers of Kosciusko State Park* t. 8, col. (1962), as *O. floribunda*.

*Vern.*: Daisy-bush. *Distr.*: RSVWZ—also Tas., N.S.W.

25. Plants with leaves and stems ± *bristly or scabrous-pubescent*; flower-heads on long or short *naked peduncles*; involucre *hemispherical*; ligulate florets *mauve, blue or violet*, >20 (15-20 in *O. ciliata* which has rigid, sharp-pointed ericoid leaves) 33

Plants *glabrous* or very slightly cottony, often *glutinous or viscid*; flower-heads sessile or stalked, sometimes in loose panicles; involucre *ovoid or ± turbinate* (rarely almost hemispherical); ligulate florets usually <15 (15-20 in *O. magniflora* which has large single purple heads) 26

26. Leaves *narrow-linear*, 2-6 cm. long, with several *large nodular swellings* along the closely revolute margins; flower-heads in terminal, sometimes leafless *corymbose panicles*; ligulate florets 12-15, white or bluish

(widespread swamp-loving shrub, 3-7 ft. high, in cooler districts from Lower Glenelg R. to sources of Murray R.):

*O. glandulosa* (Labill.) Benth. *Flor. aust.* 3: 483 (1867).

*Aster glandulosus* Labill. *Nov. Holl. Plant. Specim.* 2: 50, t. 197 (1806).

*Illust.*: Labillardière (*l.c.*); White-Honey in Ewart, *Handb. For. Trees* t. 224 (1925);

Meredith, *Bush Friends Tasm.* last ser.: t. opp. 20 (1891), as *Eurybia glandulosa*.

*Vern.*: Swamp Daisy-bush. *Distr.*: DEJNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T.

—Leaves without swellings; flower-heads solitary or in leafy or bracteate panicles 27

27. Leaves  $\pm$  terete or triangular in section, rarely flattened, the margins always closely revolute, mostly <1.5 cm. long and <2 mm. wide, often erect, never glaucous nor plant strictly coastal; ligules white 31

Leaves almost flat, mostly 1-3 cm. long and 2-5 mm. wide, often somewhat toothed (if <2 mm. wide and entire, then glaucous and plant coastal) 28

28. Leaves linear-cuneate to narrow-linear, usually <3 mm. wide; flower-heads in small leafy or bracteate panicles (rarely solitary); fruiting involucre <1 cm. wide 30

Leaves blunt, obovate-cuneate, mostly 3-6 mm. wide; flower-heads solitary, terminal; fruiting involucre 1 cm. wide or more (Mallee shrubs <3 ft. high) 29

29. Involucre  $\pm$  2 cm. wide, the innermost bracts 12-15 mm. long; ligulate florets 15-20, brilliant purple; plants open, with long slender branches and leaves usually 3- to 5-toothed at summit (Manangatang to far N.W. Mallee):

*O. magniflora* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 480 (1867).

*Aster magniflorus* F. Muell. *Fragm. Phyt. Aust.* 5: 80 (1865).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 166, col. (1968).

*Vern.*: Splendid Daisy-bush. *Distr.*: AFG—also S.A., N.S.W., Qd.

—Involucre 1-1.5 cm. wide, the innermost bracts 7-11 mm. long; ligulate florets 8-12, white (rarely mauve); plants usually compact and twiggy, with short branches, the leaves entire or crenulate at summit (frequent on sand-hills of N.W. Mallee):

*O. muelleri* (Sond.) Benth. *Flor. aust.* 3: 481 (1867).

*Eurybia muelleri* Sond. in *Linnaea* 25: 459 (1853).

*Vern.*: Mueller Daisy-bush. *Distr.*: ABFHJ—also W.A., S.A., N.S.W.

[An interesting population found at Hattah (Sept. 1965) closely approaches the South Australian *O. calcarea* F. Muell. in its narrower, distinctly toothed leaves and larger involucre ( $\pm$  12 mm. long); but the open, very slender branching and mauve ligulate florets show an approach also to *O. magniflora*, of which the plant may possibly be a hybrid.]

30. Stems *angular* (from raised decurrent lines); leaves *loosely arranged*, narrowly oblanceolate to *linear-cuneate*, *blunt*, usually  $\pm$  *toothed*, *light green*; flower-heads in loose narrow panicles (rarely almost solitary); involucre 4-5 mm. long; ligulate florets 3-5, *white*; achenes silky-pubescent (scattered through N.W., from Whipstick Scrub near Bendigo to far N.W. Mallee, also Bacchus Marsh):

*O. decurrens* (DC.) Benth. *Flor. aust.* 3: 481 (1867).

*Eurybia decurrens* DC. *Prodr.* 5: 269 (1836).

*Vern.*: Daisy-bush. *Distr.*: ABCHMN—also S.A., N.S.W.

—Stems *terete*; leaves *crowded*, *narrow-linear*, *entire*, *pointed*  $\pm$  *glaucous*; flower-heads in terminal,  $\pm$  leafy corymbose panicles; ligulate florets 6-8, often *pale bluish*; achenes minutely glandular-pubescent (dense coastal bush to 6 ft. high, from Lower Glenelg R. to Mallacoota):

*O. glutinosa* (Lindl.) Benth. *Flor. aust.* 3: 482 (1867).

*Eurybia glutinosa* Lindl. in *Edwards's bot. Reg.* 25: Misc. 68 (1839).

*Illust.*: Garnet, *Wildflowers Wilson's Prom.* fig. 824 (1971).

*Vern.*: Daisy-bush. *Distr.*: ENPTWXZ—also Tas., N.S.W.

31. Leaves erect, 2-5 mm. long,  $<0.5$  mm. wide; involucre 3-4 mm. long; ligules 5-6 mm. long; heads terminating slender leafy branchlets, very numerous and forming extensive leafy panicles (erect viscid cypress-like shrub 2-4 ft. high, scattered through sandy W. districts from the Otways to Bendigo and far N.W. Mallee, also Rushworth):

*O. teretifolia* (Sond.) F. Muell. ex Benth. *Flor. aust.* 3: 482 (1867).

*Eurybia teretifolia* Sond. in *Linnaea* 25: 464 (1853).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 13 n. 401 (1965).

*Vern.*: Cypress Daisy-bush. *Distr.*: ABFGHMNP—also S.A., N.S.W.

—Leaves 7-15 mm. long, 0.5-2 mm. wide; involucre 5-7 mm. long; ligules 7-10 mm. long (viscid Mallee shrubs 4-7 ft. tall) 32

32. Stems somewhat *cottony*; leaves  $\pm$  *spreading*, *straight-pointed*; heads 3-8 at ends of branchlets, the whole forming a *large leafy panicle*; flowering involucre  $\pm$  *cylindrical*, only 2-3 mm. wide, pallid and shining; ligules 2-4 (uncommon, from Annuello district to Hattah Lakes Nat. Park):

*O. subspicata* (Hook.) Benth. *Flor. aust.* 3: 478 (1867).

*Eurybia subspicata* Hook. in *Mitch. J. Exped. trop. Aust.* 293 (1848).

*Vern.*: Daisy-bush. *Distr.*: AF—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Stems *not* at all cottony; leaves  $\pm$  *erect*, sometimes *recurved at tips*, mostly  $<1$  mm. wide, almost triangular in section; heads *solitary* on slender branches or sometimes few together in small corymbs; flowering involucre *obconic*, 4-6 mm. wide; ligules 6-15 (rare, in Big Desert between Dimboola & Murrayville):

*O. passerinoides* (Turcz.) Benth. *Flor. aust.* 3: 482 (1867).

*Diplopappus passerinoides* Turcz. in *Bull. Soc. Nat. Moscou* 24<sup>2</sup>: 62 (1851);

*O. toppii* Ewart & J. White in *Proc. roy. Soc. Vict.* new ser. 21: 543, t. 31 (1909).

*Illust.*: Ewart & White (*l.c.*).

*Vern.*: Daisy-bush. *Distr.*: BC—also W.A., S.A.

33. Plant *glandular-hairy*, clammy, *strongly aromatic*, 3-5 ft. tall; leaves 2-4 cm. long, 1-3 mm. wide, the upper surfaces scabrous and margins revolute; heads solitary or few together on *stout, densely glandular-tomentose* peduncles; achenes *silky-hairy* (localized, on rocky mountain-sides of Macalister R., Ben Cruachan, and Pine Mtn. in far N.E.):

*O. adenophora* (F. Muell.) F. Muell. ex Benth. *Flor. aust.* 3: 486 (1867).

*Eurybia adenophora* F. Muell. *Fragm. Phyt. Aust.* 1: 111 (1859).

*Vern.*: Scented Daisy-bush. *Distr.*: SV—also N.S.W.

—Plant *non-glandular*, *almost odourless*; peduncles pubescent, setose or glabrous, *never tomentose*; achenes *glabrous* or nearly so (small shrubs of lowland heaths and Mallee)

34. Leaves in *fascicles*, *ericoid*, linear, *sharp-pointed*, 1-2 mm. wide, scabrid-ciliate on their *revolute margins*, *glabrous* or with scattered tubercles on upper surface; peduncles 2-5" long; involucre bracts acute,  $\pm$  *ciliate* (widespread on heaths from Wilson Prom. to far S.W., Grampians, Little & Big Deserts and Hattah Lakes Nat. Park):

*O. ciliata* (Benth.) F. Muell. ex Benth. *Flor. aust.* 3: 488 (1867).

*Eurybia ciliata* Benth. in Endl. et al. *Enum. Plant. Hueg.* 58 (1837).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1167 (1957); Fitch in *Curtis's bot. Mag.* 134: t. 8191, col. (1908); Ashby in *S. Aust. Mus. Wild Flower Post Card* n. 1, col. (1958); Garnet, *Wildflowers Wilson's Prom.* fig. 822 (1971).

*Vern.*: Fringed Daisy-bush. *Distr.*: ABCDEFJNT—also W.A., S.A., Tas., N.S.W.

—Leaves *alternate and scattered*,  $\pm$  flat, broadly acute or blunt, *pubescent or bristly*; peduncles <2" long; involucre sparsely *hispid*

35. Leaves *entire, linear*, mostly 3-6 mm. wide, beset with short *curved  $\pm$  appressed bristly hairs*; involucre 5-8 mm. long (uncommon, in Big Desert between Kaniva & Lake Albacutya):

*O. picridifolia* (F. Muell.) Benth. *Flor. aust.* 3: 487 (1867).

*Eurybia picridifolia* F. Muell. in *Linnaea* 25: 397 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1166 (1957); Black, *Trans. roy. Soc. S. Aust.* 35: t. 1 lower fig. (1911).

*Vern.*: Daisy-bush. *Distr.*: BC—also W.A., S.A., N.S.W.

—Leaves *boldly serrate, obovate-cuneate*, 8-18 mm. wide, with short *stiff spreading bristles*; involucre broad, 8-10 mm. long, the bright blue

rays very showy (frequent, stout, scabrid, short-lived shrub from Dimboola through Big Desert to far N.W. Mallee):

*O. rudis* (Benth.) F. Muell. ex Benth. *Flor. aust.* 3: 487 (1867).

*Eurybia rudis* Benth. in Endl. et al. *Enum. Plant. Hueg.* 58 (1837).

*Illust.*: Gardner, *Wildflowers W. Aust.* 154, col. (1959); Nicholls, *Vict. Nat.* 58: t. 26 opp. 158 (1942); Garnet, *Vegetation Wyperfeld Nat. Park* 35, also fig. 13 n. 400 (1965).

*Vern.*: Azure Daisy-bush. *Distr.*: ABCF—also W.A., S.A., N.S.W., Qd.

[Also in the tribe *Astereæ*, the North American *Grindelia squarrosa* (Pursh) Dunal (Pitch-weed) was accepted by Ewart, *Flor. Vict.* 1089 (1931), as naturalized in northern Victoria. Although there are specimens at Melbourne Herbarium from Kerang (1905) and Tatura (1909), this plant has not been noted again during the past 60 years and is now presumed to have died out in the State. *G. squarrosa* is a sticky herb 6-18" tall, with toothed oval leaves and large, hemispherical, yellow-rayed heads in leafy panicles.]

### Tribe INULÆ

CRATYSTYLIS S. le M. Moore (1905)

*C. conocephala* (F. Muell.) S. le M. Moore in *J. Bot., Lond.* 43: 138 (1905).

*Eurybia conocephala* F. Muell. in *Trans. Vict. Inst.* 1: 36 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: 894 fig. 1198 (1957); Black, *Trans. roy. Soc. S. Aust.* 40: t. 7 (1916); Ewart & Rees, *Proc. roy. Soc. Vict.* new ser. 24: t. 55 fig. a, d, g, h (1912), as *Stera conocephala*.

*Vern.*: Blue-bush Daisy. *Distr.*: ? B (or C)—also W.A., S.A., N.S.W.

[The only presumptive Victorian specimen at Melbourne Herbarium is one bearing the label "beyond the Wimmera", and collected more than a century ago by W. L. Morton. As no subsequent occurrences have been reported, this species may have become extinct in the State. *C. conocephala* is a dense hoary bush 2-4 ft. high and wide, inhabiting alkaline mallee country; its crowded, flat, obovate leaves are 5-10 mm. long and the solitary cylindrical flower-heads about 14 mm. long. In S. Australia it is called "bluebush" and, in habit, it certainly bears a striking resemblance to larger silvery-grey members of the genus *Kochia* (notably *K. astrotricha* & *K. sedifolia*). For a full account of the involved synonymy, see Willis in *W. Aust. Nat.* 10: 158-60 (1967).]

### EPALTES Cass. (1818)

1. Plant *erect, glabrous* or nearly so, 6-16" tall; leaves oblong-lanceolate to broad-linear, sessile, to 3" long, slightly toothed; flower-heads  $\pm$  globular,  $\pm$  3 mm. diam., in branched leafless *terminal panicles*; bisexual flowers with 2-5 weak pappus-bristles (scattered on damp flats from the Wimmera and Lake Lalbert to far N.W.):

*E. cunninghamii* (Hook.) Benth. *Flor. aust.* 3: 530 (1867).

*Ethulia cunninghamii* Hook. in Mitch. *J. Exped. trop. Aust.* 62 (1848).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1148 i (1957)—barren floret; Mueller, *Key Syst. Vict. Plants* 2: fig. 82 (1886); Mueller, *Plants indig. Colon. Vict.* t. 38 (1864-65), as *Ethuliopsis dioica*.

*Vern.*: Tall Nut-heads. *Distr.*: ABCG—also S.A., N.S.W., Qd.

—Plant  $\pm$  *scabrous-pubescent*, <6" high; flower-heads *lateral*; pappus none 2

2. Stems 2-12" long, *ascending* or almost prostrate; leaves 1-5 cm. long, *petiolate*, *obovate-spathulate*, sinuate-toothed or crenate; heads usually  $\pm$  *stalked*, almost *hemispherical*, 4-7 mm. diam.; female flowers *numerous* ( $\pm$  100); achenes 1-1.5 mm. long, 8- to 14-ribbed (locally frequent on flooded ground of Murray Valley downstream from Robinvale, also Lake Hindmarsh & Wimmera):

*E. australis* Lessing in *Linnæa* 5: 148 (1830).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: 895 fig. 1199, also 1148 H as fertile floret (1957); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 134 (1906); Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 158 (1901).

*Vern.*: Spreading Nut-heads. *Distr.*: ACF—also S.A., N.S.W., Qd, N. Terr., Cent. Aust.

—Stems 1-2" high, *erect*, dichotomously branching; leaves <1 cm. long, linear to *narrow-ob lanceolate*, mostly opposite; heads *sessile*, *globular*, 2.5-3 mm. diam.; female flowers  $\pm$  20; achenes 0.5 mm. long (rare annual of W. Wimmera—Dimboola & Antwerp districts):

*E. tatei* F. Muell. in *Trans. roy. Soc. S. Aust.* 6: 31 (1883).

*Vern.*: Small Nut-heads. *Distr.*: C—also W.A., S.A.

#### STUARTINA Sond. (1853)

*S. muelleri* Sond. in *Linnæa* 25: 522 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: 896 fig. 1200 (1957); Burbidge, *Flor. Aust. Cap. Terr.* fig. 387 A (1970).

*Vern.*: Spoon Cudweed. *Distr.*: ABCDEHJKMNPRSVWZ—also S.A., N.S.W., A.C.T., Qd, N.Z.

[*S. hamata* W. R. Philipson (1937) of N.S.W. has been found near the junction of the Murray & Darling Rivers, and may extend into northern Victoria; it differs from *S. muelleri* in having the mid-rib of inner involucre bracts *long-excurrent and bent into a rigid yellow hook*.]

#### GNAPHALIUM L. (1753)

1. Involucre bracts (phyllaries) with hard *opaque white spreading rays*,  $\pm$  2.5 mm. long; heads in dense terminal leafy corymbose clusters; leaves *ob lanceolate* to *spathulate*, 1-3 cm. long (a densely white-cottony, much-branched annual weed 6-12" high, widespread and



often on silt deposits almost throughout State excepting alps, northern plains & farther N.W.):

\**G. candidissimum* Lam. in *Encycl. méth. Bot.* 2: 754 (1789).

*Illust.*: Lee, *Wild Life (Melb.)* 13: 357 (1951).

*Vern.*: White Cudweed. *Distr.*: CDHJNPTWZ—also Tas., ?N.S.W.

- Involucral bracts *without spreading rays*, usually  $\pm$  *translucent* 2
- 2. Flower-heads normally *in clusters, sessile*; involucral bracts  $< 6$  mm. long 4
- Flower-heads *solitary, terminal,  $\pm$  pedunculate* (not subtended by any leaves immediately under involucre); involucral bracts 6-7 mm. long or more (uncommon perennial herbs of higher alps) 3
- 3. Leaves chiefly basal, *oblanceolate to spatulate*, 1-3 cm. long, densely covered with soft *white cottony hairs*, the mid-rib *hardly apparent* towards apex on under-side; peduncles *elongated*, 1-2" long, woolly, bearing a few much-reduced leaves (uncommon and scattered through alps—Lake Mountain, Baw Baws, Mt. Hotham, Wombargo Range):

*G. traversii* Hook. f. *Handb. N.Z. Flor.* 154 (1864).

*Vern.*: Mat Cudweed. *Distr.*: SVW—also Tas., N.S.W., N.Z.

- Leaves densely clustered,  $\pm$  *erect*,  $< 1$  cm. long,  $\pm$  *oblong*, covered on both sides with *shining yellowish appressed silky hairs*, the mid-rib *prominently raised* near apex underneath; peduncles *not* or hardly exceeding the leaves (rare, at Pretty Valley on Bogong High Plains):

*G. nitidulum* Hook. f. *Handb. N.Z. Flor.* 154 (1864).

*Vern.*: Shining Cudweed. *Distr.*: V—also N.Z.

- 4. Flower-heads arranged in a *leafless corymb* (never overtopped by foliage),  $\pm$  *globular*, 3-5 mm. diam.; involucral bracts *obovate-oblong*, entire, shining, *pale yellow to golden*, somewhat incurved at apex; leaves linear to oblanceolate, 1-2" long (erect, densely white-cottony annual or biennial to 18" high, frequent almost throughout State):

*G. luteo-album* L. *Spec. Plant.* 2: 851 (1753).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 300, col. (1968); Leigh & Mulham, *Pastoral Plants Riverine Plain* 127, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1201 (1957); Butcher, *New ill. Brit. Flor.* 2: fig. 1260 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5817 (1960); Marloth, *Flor. S. Afr.* 3<sup>a</sup>: t. 57 fig. A, col. (1932); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1536, col. (1923); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 261 fig. 4, col. (1915); Garnet, *Wildflowers Wilson's Prom.* fig. 798 (1971).

*Vern.*: Jersey Cudweed. *Distr.*: ABCDEFHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

- Flower-heads in *leafy racemes, spikes or clusters*, often overtopped by floral leaves; involucral bracts *linear-oblong to ovate* (narrowed towards apex), hyaline to brownish or tinged with purple 5

5. Leaves with upper surfaces *green* and at length almost or quite *glabrous* 9  
 Leaves with both surfaces *white*, densely woolly or silky-cottony 6
6. Plants *perennial*, montane to alpine; involucre 3-7 mm. long 8  
 Plants *annual or ephemeral*, in lowland or foothill country; involucre  
 <3 mm. long 7
7. Leaves *narrowly obovate* to *oblanceolate*, to 4 cm. long; heads in *leafy racemes*, not exceeded by floral bracts; corolla of female florets *filiform*; plant >3" high (scattered through W. & N.W. districts, also Corner Inlet):

**G. indicum** L. *Spec. Plant.* 2: 852 (1753).

*Vern.*: Indian Cudweed. *Distr.*: ACMNT—also W.A., S.A., N.S.W., Qd.

—Leaves *linear*, <2 cm. long; heads in *sessile terminal clusters*, much exceeded by the leaf-like floral bracts; corolla of female florets *narrowly conical*; plant <3" high (widespread in W., S.W. & N.W., also Sperm Whale Head):

**G. indutum** Hook. f. in Hook. *Lond. J. Bot.* 6: 121 (1847).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 62 fig. B, col. (1857).

*Vern.*: Tiny Cudweed. *Distr.*: CEHJMNPW—also S.A., Tas., N.S.W., Qd.

8. Leaves 1-3 cm. long, <6 mm. wide, *oblanceolate*; heads 3-7 in a leafy terminal cluster or short panicle, subtended by *oblanceolate to linear* floral leaves; phyllaries 5-7 mm. long, often rosy; plant extensively *rhizomic and almost mat-forming* (widespread throughout alpine grasslands):

**G. argentifolium** N. A. Wakefield in *Vict. Nat.* 73: 187 (1957).

*G. collinum* Labill. var. *radicans* F. Muell. ex Benth. *Flor. aust.* 3: 654 (1867).

*Vern.*: Silver Cudweed. *Distr.*: SVW—also Tas., N.S.W.

—Leaves 2-6 cm. long, 7-18 mm. wide, long-petiolate, the blade broadly *elliptic to obovate*; heads usually >7 in a compact cluster, subtended by 1-3 conspicuous *obovate-elliptic* floral leaves; phyllaries 3-4 mm. long; plant *tufted and ± stoloniferous* (perching on shaded rock-faces of E. highlands, and uncommon):

**G. umbricola** J. H. Willis in *Vict. Nat.* 73: 200 (1957).

*G. alpigenum* F. Muell. ex Hook. f. *Flor. Tasm.* 1: 217 (1856), t. 62 A col. (1857), non Koch (1851):

*Illust.*: Fitch in Hooker (*l.c.*).

*Vern.*: Cliff Cudweed. *Distr.*: NRSVWZ—also Tas., N.S.W.

9. Flower-heads very numerous, in dense axillary clusters or short spikes forming an elongated leafy *spike-like inflorescence* (plants annual or biennial, sometimes weeds of cultivation) 12

Flower-heads aggregated in a *pedunculate compact compound head*, subtended by 1 to several spreading floral leaves (sometimes 1 or 2 secondary smaller heads along the common peduncle) 10

10. Floral leaves of globose compound head  $>3$  (often 8-10), linear, stelliform, very conspicuous and *usually far exceeding head*; capitula very numerous (widespread annual or biennial to 18" tall):

**G. involucreatum** Forst. f. *Flor. Ins. Aust. Prodr.* 55 (1786).

*G. japonicum* sens. Ewart *Flor. Vict.* 1123 (1931), atque Benth. *Flor. aust.* 3: 653 (1867), *non* Thunb. (1784).

*Illust.*: Mort in Sulman, *Wild Flowers N.S.W.* 2: t. 36 (1914), as *G. japonicum*; Abrams, *Ill. Flor. Pacific States* 4: fig. 5830 (1960), as *G. japonicum*; Schimper, *Plant Geogr.* Engl. transl. & revised ed.: 732 fig. 430 (1903); *Curtis's bot. Mag.* 52: t. 2582, col. (1824); Burbidge, *Flor. Aust. Cap. Terr.* fig. 388 (1970).

*Vern.*: Common or Star Cudweed (Darrada—W.A. aborig.). *Distr.*: BCDEFHJK LMNPRSTVWZ—also W.A., S.A., N.S.W., A.C.T., Qd, Cent. Aust., N.Z. (introd. to Calif.).

—Floral leaves under compound head 1-3; capitula mostly  $<15$  (stoloniferous perennials) 11

11. Cauline leaves *subsessile*, narrowly *oblanceolate to linear*; floral leaves *narrow*, inconspicuous and *scarcely longer* than compound head; involucre broadly cylindrical to campanulate; phyllaries *linear-oblong*; pappus-bristles falling in groups (widespread in cooler districts and frequent throughout highlands):

**G. japonicum** Thunb. *Flor. japon.* 311 (1784).

*G. collinum* Labill. *Nov. Holl. Plant. Specim.* 2: 44, t. 189 (1806).

*Illust.*: Labillardière (*l.c.*); Abrams, *Ill. Flor. Pacific States* 4: fig. 5829 (1960), as *G. collinum*.

*Vern.*: Creeping Cudweed. *Distr.*: CDEHJMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z. (introd. to Calif.).

—Cauline (and radical) leaves *petiolate*, *lanceolate to broadly elliptical*, white beneath with silky-cottony hairs; floral leaves *elliptic-obovate*, spreading, *distinctly longer* than compound head; involucre ovoid; phyllaries elliptical; pappus-bristles free, falling singly (shaded rock-faces and ledges in E. highlands):

**G. umbricola** J. H. Willis. [See p. 701]

12. Involucre 4-4.5 mm. long, the phyllaries all *acute to acuminate* (frequent throughout State, excepting Mallee):

\***G. purpureum** L. *Spec. Plant.* 2: 854 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5832 (1960); Cabrera, *Revta Mus. La Plata nueva ser.* 4 (Bot.): 176 fig. 48 (1941); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 456 (1913); Fitch in Hooker f., *Flor. antarct.* 2: t. 113 (1846), as *G. spicatum*.

*Vern.*: Purple Cudweed. *Distr.*: CDEJKMNPSTVWZ—also Tas., N.S.W., A.C.T., Qd, N.Z.

—Involucre 3-4 mm. long, the phyllaries all *obtuse* (Melbourne area, Dandenongs & S. Gippsland, but range uncertain owing to previous confusion with *G. purpureum*):

\**G. spicatum* Lam. in *Encycl. méth. Bot.* 2: 757 (1789).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 35, col. (1958); Cabrera, *Revta Mus. La Plata nueva ser.* 4 (Bot.): 170 fig. 46 B (1941).

*Vern.*: Spiked Cudweed. *Distr.*: NT—also N.S.W.

[Two other American species closely related to *G. purpureum* are *G. calviceps* Fernald and *G. platense* Cabrera, each of which has the leaves *woolly on both surfaces*. The former, recorded for S. Aust., has an indumentum of woolly hairs only and the inner phyllaries *obtuse*; while the latter, occurring on the south coast of N.S.W., has an indumentum of mixed woolly and septate-glandular hairs, the phyllaries being all *acuminate*. It is possible that these extend also into Victoria, but as yet confirmatory material is lacking from Melbourne Herbarium.]

#### EWARTIA Beauverd (1910)

*E. nubigena* (F. Muell.) Beauverd in *Bull. Soc. bot. Genève sér.* 2, 2: 239 fig. xvi (1910).

*Antennaria nubigena* F. Muell. in *Trans. phil. Soc. Vict.* 1: 45 (1855).

*Illust.*: Beauverd (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* tt. 516 & 517 (1968); Mueller, *Key Syst. Vict. Plants* 2: fig. 83 (1886), as *Leontopodium catipes*; Mueller, *Plants indig. Colon. Vict.* t. 45 (1864-65), as *Antennaria nubigena*.

*Vern.*: Silver Ewartia (Brown Edelweiss). *Distr.*: RV (high alps)—also N.S.W.

#### CASSINIA R. Br. (1817)

1. Inflorescence *paniculate*,  $\pm$  *pyramidal*, *loose*, longer (3-6 cm.) than broad, often *pendulous*, *pale brown* and glossy; florets only 2-3 per head; leaves  $< 1$  cm. long, narrow-linear, strongly revolute and appearing  $\pm$  *terete* (dense aromatic shrub 3-6 ft. high, widespread in auriferous country of Cent. & W. districts, also far W., N.W., Goulburn Valley & nearer N.E.):

*C. arcuata* R. Br. in *Trans. Linn. Soc. Lond.* 12: 128 (1817).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 317, col. (1968); Wauer in Ewart, *Weeds . . . Vict.* t. opp. 33, col. (1909), also in *J. Dep. Agric. Vict.* 5: t. 15 opp. 298, col. (1907); Mueller, *Key Syst. Vict. Plants* 2: fig. 84 (1886); Mueller, *Plants indig. Colon. Vict.* t. 43 (1864-65), as *C. paniculata*.

*Vern.*: Drooping Cassinia (Chinese Tea Scrub). *Distr.*: ACDFHJMNRS—also W.A., S.A., N.S.W., A.C.T.

—Inflorescence *corymbose*, *compact*, broader than long, stiffly *erect*, mostly *white* or *stramineous*; florets usually  $> 4$  per head; leaves 1-10 cm. long

2. Leaves 3-10 cm. long, often 3-7 mm. wide, the upper surface dark green and *glabrous* (never scabrid or wrinkled), the margins often only slightly recurved 4  
 Leaves mostly 1-3 cm. long, <3 mm. wide, the upper surface *scabrid or wrinkled* and margins quite *revolute* 3
3. Leaves almost terete, <0.5 mm. wide, sometimes hooked at apex (in montane form); inflorescence almost *flat* at summit, at first stramineous; involucre bracts often 5-seriate, the inner  $\pm 0.5$  mm. wide and dull creamy white; achenes *glabrous* (slender viscid shrub to 5 ft. high in Gippsland valleys, Warby Range, Goulburn R. to Bendigo district, Kerang, Little & Big Deserts):

**C. uncata** A. Cunn. ex DC. *Prodr.* 6: 156 (1838).

*C. complanata* J. M. Black in *Trans. roy. Soc. S. Aust.* 52: 230 (1928).

*Illust.*: Mass, *Flowers aust. Alps* 21 (1967).

*Vern.*: Sticky Cassinia. *Distr.*: BCGJMRSW—also S.A., N.S.W., A.C.T.

—Leaves 0.5-2 mm. wide, never hooked; inflorescence *convex* at summit, often pink when young; involucre bracts 3- to 4-seriate, the inner  $\pm 1$  mm. wide and usually clear white; achenes often  $\pm$  *pubescent* (widespread throughout forest-land of State, from sea-level to alps, but not in Mallee; often forming dense thickets to 10 ft. high following fires):

**C. aculeata** (Labill.) R. Br. in *Trans. Linn. Soc. Lond.* 12: 127 (1817).

*Calea aculeata* Labill. *Nov. Holl. Plant. Specim.* 2: 41, t. 185 (1806).

*Illust.*: Labillardière (*l.c.*); King & Burns, *Wildflowers Tasm.* 57, col. (1969); Hösel, *Wildflowers S.-E. Aust.* 78, col. (1969); Cookson in Ewart, *Handb. For. Trees* t. 226 (1925); Reeves in Barrett, *Aust. Wildflower Book* 164 (1942).

*Vern.*: Common Cassinia (Dogwood; Dolly Bush—Tas.). *Distr.*: EJKMNPRSTV WZ—also S.A., Tas., N.S.W., A.C.T.

4. Under-surface of leaves 1-nerved, the glandular indumentum obscured by a *mat of cottony hairs* (tall rounded bush or small tree, widespread in forests and rocky gorges throughout State, also along E. coasts):

**C. longifolia** R. Br. in *Trans. Linn. Soc. Lond.* 12: 127 (1817).

*Illust.*: Cookson in Ewart, *Handb. For. Trees* t. 227 (1925); Burbidge, *Flor. Aust. Cap. Terr.* fig. 386 (1970).

*Vern.*: Shiny Cassinia. *Distr.*: CDEJNPRSTVWXZ—also Tas., N.S.W., A.C.T., Qd.

—Under surface of leaves distinctly 3-nerved, with a pubescence of *glandular hairs only* (tall shrub scattered through E. forests—from Dandenong Ranges to Mt. Ellery in E. Gippsland):

**C. trinerva** N. A. Wakefield in *Vict. Nat.* 68: 69 (1951).

*Vern.*: Cassinia. *Distr.*: NTZ—also Tas.

## APALOCHLAMYS Cass. (1828)

*A. spectabilis* (Labill.) J. H. Willis in *Muelleria* 13: 160 (1967).

*Calea spectabilis* Labill. *Nov. Holl. Plant. Specim.* 2: 42, t. 186 (1806);

*Cassinia spectabilis* (Labill.) R. Br. *Trans. Linn. Soc. Lond.* 12: 128 (1817).

*Illustr.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 50, col. (1968); Hart in *Edwards's bot. Reg.* 8: t. 678, col. (1823), as *Cassinia spectabilis*.

*Vern.*: Showy *Cassinia*. *Distr.*: EKNTWZ—also S.A., Tas.

## PARANTENNARIA Beauverd (1911)

*P. uniceps* (F. Muell.) Beauverd in *Bull. Soc. bot. Genève sér.* 2, 3: 256, 257 fig. ii (1911).

*Antennaria uniceps* F. Muell. in *Trans. phil. Soc. Vict.* 1: 105 (1855).

*Illustr.*: Beauverd (*l.c.*); Burbidge, *Flor. Aust. Cap. Terr.* fig. 379 (1970).

*Distr.*: V (Bogong High Plains)—also N.S.W. (Kosciusko Plateau), A.C.T. (Mt. Gingera).

## HELIPTERUM DC. (1838)

1. Inner bracts of involucre *without radiating laminae*, mostly bronzy or greenish; flower-heads often small and clustered, *never* single on long peduncles 11

Inner bracts of involucre with prominent *radiating, opaque, white or yellow laminae* (sometimes only 1-3 mm. long); flower-heads often single on long peduncles 2

2. Involucres *ovoid to ± cylindrical, several together* in leafy clusters or loose corymbs; laminae of ray-bracts white; achenes silky 10

Involucres *hemispherical to obconical, solitary* and terminal 3

3. Plants *sparsely woolly* (at least when young); leaves narrow-linear, usually ± 1 cm. long or less (small slender annuals) 7

Plants either densely cottony to woolly or entirely glabrous; leaves mostly > 1 cm. long 4

4. Plant quite *glabrous*; achenes *silky-pubescent* 6

Plant *densely cottony or woolly-villous*; achenes smooth or papillose 5

5. Intermediate bracts of involucre *broadly ovate-deltoid to ± orbicular*, pale yellow; ray golden-yellow; achenes *densely and coarsely papillose*; leaves flaccid, linear-oblong to oblanceolate, 1-3" long (rare annual in Swan Hill district, also at Serpentine ± 12 miles N.N.E. of Inglewood):

*H. molle* (A. Cunn. ex DC.) P. G. Wilson in *Trans. roy. Soc. S. Aust.* 83: 175 (1960).

*Helichrysum molle* A. Cunn. ex DC. *Prodr.* 6: 194 (1838).

*Illustr.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 130, col. (1965); Wilson, *Trans. roy. Soc. S. Aust.* 83: 175 fig. 2, 177 fig. 4 (1960).

*Vern.*: Sunray. *Distr.*: FGH—also S.A., N.S.W., Qd.

- Intermediate bracts of involucre usually *narrow-ovate to lanceolate*; ray yellow or white, sometimes reddish or purple externally; achenes *smooth to slightly papillose* (chiefly perennial, of wide range from sea-level to alps and frequent in highlands):

**H. albicans** (A. Cunn.) DC. *Prodr.* 6: 211 (1838).

*Elichrysum albicans* A. Cunn. in *Field Geogr. Mem. N.S.W.* 359 (1825).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 538. col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 166 (1967); Hooker in Curtis's *bot. Mag.* 56: t. 2881, col. (1829), as *Elichrysum incanum*; Bishop in Barrett, *Aust. Wildflower Book* t. opp. 56 (1942); Wilson, *Trans. roy. Soc. S. Aust.* 83: 175 fig. 3-9, 177 fig. 1-3 (1960); Hooker, *Icon. Plant.* 4: t. 318 (1841), as *H. incanum*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 383 (1970), var. *incanum*.

*Vern.*: Hoary Sunray. *Distr.*: DEGJKMNPRSVW—also S.A., Tas., N.S.W., A.C.T., Qd.

[P. G. Wilson, in *Trans. roy. Soc. S. Aust.* 83: 168-75 (1960), has published a taxonomic survey of this highly polymorphic species. As far as Victoria is concerned, he recognizes two subspecies, viz. subsp. *alpinum* (F. Muell., ut *H. incanum* var., 1859) P. G. Wilson *l.c.* 174 (from between Mts. Hotham & Bogong at  $\pm$  6000 ft. alt.)—distinguished by its *broad* (5-10 mm.) obovate to oblanceolate, densely woolly leaves and white rays, the outer bracts being pale brown to reddish externally—and subsp. *albicans*, having narrowly oblong to linear or filiform leaves. The latter is further divided into the following three varieties: var. *incanum* (Hook., ut sp., 1829) P. G. Wilson *l.c.* 171 (W. districts of Vic.), with *white rays* and the intermediate bracts narrowly obovate to lanceolate; var. *albicans* (almost throughout State excepting Mallee) and var. *buffaloensis* P. G. Wilson *l.c.* 170 (endemic on the Mt. Buffalo Plateau above 4000 ft.), both being yellow-rayed. Involucres of the localized var. *buffaloensis* have broadly ovate to deltoid intermediate bracts, as in *H. molle*, but it is a taller, perennial herb and the achenes are only slightly verrucose.]

6. Plant *annual*, to 1 ft. high; leaves *broad-linear* to oblanceolate-oblong, 1-2" long, often  $\pm$  glaucous; peduncles usually *naked*; ray-bracts *yellow* (uncommon, in lower Murray Valley & far. N.W.):

**H. polygalifolium** DC. *Prodr.* 6: 216 (1838).

*Vern.*: Sunray. *Distr.*: AFG—also S.A., N.S.W., Qd.

- Plant *perennial*, 1-2 ft. high; leaves *narrow-linear*, to 1" long; peduncles  $\pm$  leafy; ray-bracts *white* (far N.W. to alps where locally plentiful in rocky places, but absent from N. plains and coastal areas):

**H. anthemoides** (Sieber ex Spreng.) DC. *Prodr.* 6: 216 (1838).

*Elichrysum anthemoides* Sieber ex Spreng. *Syst. Veg.* 3: 484 (1826).

*Illust.*: Sourry in *Aust. Wild Life* 4\*: 11 (1962); Fitch in Hooker f., *Flor. Tasm.* 1: t. 61, col. (1857).

*Vern.*: Chamomile Sunray. *Distr.*: ABCGHJMNRSVW—also Tas., N.S.W., A.C.T., Qd.

7. Involucral bracts all *obtuse*, the largest of the outer having *brown spreading laminæ* distinct from claws; rays of inner bracts 2-5 mm. long, *bright yellow* 9  
 Involucral bracts mostly *acutish*, the outer ones hyaline or wholly pale brownish but *none* with distinctive brown spreading laminæ; rays of inner bracts mostly 7-8 mm. long, usually *white* (rarely yellow) 8
8. Leaves *glabrous*, often > 1 cm. long; receptacle *hemispherical or conical*; ray-bracts always white; achenes densely *silky-villous* (from Wyperfeld Nat. Park into far N.W.):

*H. stuartianum* Sond. & F. Muell. ex Sond. in *Linnaea* 25: 518 (1853).

*Vern.*: Sunray. *Distr.*: ABF—also S.A., ?N.S.W.

—Leaves mostly sprinkled with *long white hairs*; receptacle almost *flat*; ray-bracts *white or yellow*; achenes *glabrous to slightly papillose* (Cent. W., far W. & N.W. generally, also Goulburn Valley):

*H. cotula* (Benth.) DC. *Prodr.* 6: 215 (1838).

*Helichrysum cotula* Benth. in Endl. et al. *Enum. Plant. Hueg.* 65 (1837).

*Illust.*: Fitch in *Curtis's bot. Mag.* 92: t. 5604, *col.* (1866); Engler & Drude, *Vegetation Erde* 7: 225 (1906).

*Vern.*: Sunray. *Distr.*: ABDHJM—also W.A., S.A., N.S.W., Qd.

9. Heads *obconical* or  $\pm$  *turbinate*, 7-9 mm. long (excluding ray); laminæ of inner involucral bracts 4-5 mm. long; corollas *not* noticeably dilated upwards; achenes *compressed, glabrous* or nearly so, with *transparent wing-like margins*; pappus-bristles with *long smooth dilated bases* (Mallee N. of Dimboola & N.W. from Donald, also Murray Valley N.W. of Swan Hill):

*H. hyalospermum* F. Muell. ex Benth. *Flor. aust.* 3: 644 (1867).

*Hyalospermum strictum* Steetz in *Plant. Preiss.* 1: 477 (1845), *non Helipterum strictum* (Lindl.) Benth. (1867);

*Hyalospermum glutinosum* Steetz in *Plant. Preiss.* 1: 477 (1845), *non Helipterum glutinosum* Hook. (1848);

*Helipterum variabile* (Sond., ut *Hyalospermum* sp., 1853—*nom. illegit.*) Ostenfeld in *Biol. Medd., Kbh.* 3<sup>2</sup>: 141 (1921).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 131, *col.* (1965), as *H. variabile*.

*Vern.*: Sunray. *Distr.*: ABCGH—also W.A., S.A., N.S.W., Qd.

—Heads *hemispherical*, 4-6 mm. long (excluding ray); laminæ of inner involucral bracts 2-3 mm. long; corolla-tubes manifestly *dilated in upper third*; achenes *turgid, boldly papillose, not winged*; pappus-bristles plumed almost to base which is *not* long-dilated (almost co-extensive with *H. hyalospermum*, *q.v.*, also Dookie in N.E.):



*H. jessenii* F. Muell. in *Vict. Nat.* 7: 48 (1890).

*Vern.*: Sunray. *Distr.*: ABCFGHR—also W.A., S.A., N.S.W.

10. Plant 4-12" high, densely *white-cottony*; leaves *broad-linear*, 1-3 cm. long; corymbs *loose*, sometimes only 3-headed; involucre on *slender peduncles*, pale brown below, 10-15 mm. long, the white laminæ of ray-bracts 5-8 mm. long; florets 12-30 (widespread throughout Mallee & Wimmera, extending to Cent. W. & Goulburn Valley):

*H. corymbiflorum* Schlechtendal in *Linnaea* 21: 448 (1848).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 168, col. (1968); Leigh & Mulham, *Pastoral Plants Riverine Plain* 129, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1204 (1957); Bishop in Galbraith, *Wild Life (Melb.)* 4: 368 (1942); Hayward & Druce, *Advent. Flor. Tweedside* 100 (1919).

*Vern.*: Sunray. *Distr.*: ABCDEFGHJMNRV—also S.A., N.S.W., Qd, Cent. Aust.

—Plant 1-4" high, *glabrous*; leaves  $\pm$  *filiform*, mostly <1 cm. long; corymbs *compact*, leafy; involucre narrow, dark brown, 7-9 mm. long, the white laminæ of ray-bracts only  $\pm$  1 mm. long; florets 4-6 (almost co-extensive with *H. corymbiflorum*, q.v., also in Werribee Gorge & Chiltern district):

*H. pygmæum* (DC.) Benth. *Flor. aust.* 3: 647 (1867).

*Pteropogon pygmæum* DC. *Prodr.* 6: 245 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 131, col. (1965).

*Vern.*: Sunray. *Distr.*: ABCFGHMNR—also W.A., S.A., N.S.W., Qd.

11. Heads  $\pm$  *globular*, *sessile*; involucre bracts *not* exceeding the subtending leaves 14

Heads shortly *cylindrical*, numerous, in dense clusters or loose panicles that far exceed the foliage 12

12. Plant *glabrous* and  $\pm$  *glaucous*; leaves narrow-linear, mostly <15 mm. long; flower-heads *stalked*, in loose panicles with capillary branches, narrow, shining brown,  $\pm$  4 mm. long; florets 9-12; pappus-bristles 15-20 (uncommon, scattered through far W. Mallee from Little Desert to Wyperfeld Nat. Park, also Whipstick Scrub near Bendigo and Graytown area):

*H. læve* (A. Gray) Benth. *Flor. aust.* 3: 649 (1867).

*Pteropogon lævis* A. Gray in Hook. *J. Bot. & Kew Gdns Misc.* 4: 269 (1852).

*Vern.*: Sunray. *Distr.*: BCFM—also W.A., S.A., N.S.W.

—Plant *densely cottony*; leaves linear to oblanceolate, 15-20 mm. long, their margins often  $\pm$  crinkled; flower-heads *sessile*, in dense  $\pm$  *globular*, often compound, *pedunculate clusters*, creamy and rather dull, 4-6 mm. long 13

13. Florets 2-4 per head; achenes almost *glabrous* but *enveloped in dense wool*; pappus-bristles 5-10 (frequent from Wyperfeld Nat. Park into far N.W. Mallee):

*H. moschatum* (A. Cunn. ex DC.) Benth. *Flor. aust.* 3: 648 (1867).

*Gnaphalium moschatum* A. Cunn. ex DC. *Prodr.* 6: 236 (1838).

*Vern.*: Sunray. *Distr.*: AB—also S.A., N.S.W., Qd, Cent. Aust.

—Florets 6-12 per head; achenes *sparsely pubescent, not enveloped in wool*; pappus-bristles 12-19 (rare—Natya, Annuello & Mildura districts):

*H. tietkensis* F. Muell. *Fragm. Phyt. Aust.* 8: 227 (1874).

*Vern.*: Sunray. *Distr.*: AF—also S.A., N.S.W., Cent. Aust.

14. Plant 2-12 cm. high; leaves *broad-linear to narrow-lanceolate*, 8-30 mm. long, the margins sometimes crinkled; involucre 4-5 mm. long, with *acute bracts*, the outer bracts *whitish and ciliate*, the inner *green and glandular*; achenes almost *glabrous*; pappus-bristles 1-4 or lacking (abundant in open places throughout State, excepting farther N.W. Mallee and alps):

*H. australe* (A. Gray) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 627 (1917).

*Dimorpholepis australis* A. Gray in Hook. *Icon. Plant.* 9: t. 856 (1852);

*Triptilodiscus pygmaeus* Turcz. in *Bull. Soc. Nat. Moscou* 24<sup>2</sup>: 66 (1851), non *Pteropogon pygmaeus* DC. *Prodr.* 6: 245 (1838).

*Illust.*: Fitch in Hooker (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 128, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1207 (1957).

*Vern.*: Common Sunray. *Distr.*: BCDEGHJKMNPRSVWZ—also W.A., S.A., N.S.W., A.C.T.

—Plant 1-2 cm. high, rather moss-like; leaves *filiform*, 2-5 mm. long; involucre  $\pm$  3 mm. long and wide, the bracts *obtuse, glabrous*, all thin & scarious; achenes *papillose*; pappus-bristles  $\pm$  10 (a widespread lowland ephemeral, excepting Gippsland & farther N.E.):

*H. demissum* (A. Gray) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 627 (1917).

*Pteropogon demissus* A. Gray in Hook. *J. Bot. & Kew Gdns Misc.* 4: 269 (1852).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 378 (1965).

*Vern.*: Sunray. *Distr.*: ABCDEFHJKMNPR—also W.A., S.A., Tas., N.S.W.

#### IXIOLÆNA Benth. (1837)

Plant loosely cottony on stems and branches, but foliage usually *green and ± scabridulous*; leaves linear-lanceolate, rather *rigid*; peduncles *elognated*; involucre 5-8 mm. long,  $\pm$  campanulate; bracts linear-oblong, *obtusish*;

pappus-bristles 8-12 (N.W. generally, and up Murray Valley to Nathalia district):

*I. leptolepis* (DC.) Benth. *Flor. aust.* 3: 597 (1867).

*Helichrysum leptolepis* DC. *Prodr.* 6: 194 (1838).

*Vern.*: Plover Daisy. *Distr.*: ACFGJM—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

Plant loosely *cottony-woolly all over*; leaves lanceolate,  $\pm$  *flaccid*; peduncles *short, leafy*; involucre 10-14 mm. long, cylindrical-campanulate; bracts linear-lanceolate,  $\pm$  *acute*; pappus-bristles 12-40 (rare semi-shrub,  $\pm$  1 ft. high or more, in extreme N.W. at Boundary Point):

*I. tomentosa* Sond. & F. Muell. ex Sond. in *Linnæa* 25: 504 (1852).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1148 v (1957)—anther-tube only.

*Vern.*: Woolly Ixiolæna. *Distr.*: A—also W.A., S.A., N.S.W., Qd.

[The almost prostrate *I. supina* F. Muell. occurs on Deal and Curtis Islands (E.-Cent. Bass Strait) and might be anticipated on Wilson Prom.; it is noteworthy in having stiffly hairy *oblong-cuneate* leaves and *creamy-white* flower-heads (1-2 cm. across) on relatively short peduncles.]

### HELICHRYSUM Mill. (1754)

1. Plant a *shrub*; involucre *numerous*, usually densely clustered, <8 mm. diam. (except in *H. stirlingii*); if bracts ever recurved, then with white or purplish tips [Subgenus *Ozothamnus*] 15  
 Plant *herbaceous* (sometimes annual); involucre *solitary or few*, >8 mm. diam. or, if smaller and densely clustered, then with golden-yellow bracts recurved at tips [Subgenus *Helichrysum*] 2
2. Laminæ of involucral bracts *not ciliate* (except, rarely, the short innermost ones) but sometimes  $\pm$  *cottony* 5  
 Laminæ of involucral bracts *prominently ciliate* on margins 3
3. Flower-heads mostly >1" diam., *solitary*; laminæ of intermediate bracts *white* (rarely straw-coloured), 10-15 mm. long; leaves very narrowly linear, almost filiform, green above (tomentose perennial, widespread on sandy lowland heaths from the Mallee to East Gippsland):

*H. baxteri* A. Cunn. ex DC. *Prodr.* 6: 193 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 122, col. (1968); Reeves in Garnet, *Vegetation Wyperfeld Nat. Park* 23 (1965); Bishop in Barrett, *Aust. Wildflower Book* t. opp. 64 (1942); Reeves, *Wild Life (Melb.)* 2: 27 (Dec. 1940); Garnet, *Wildflowers Wilson's Prom.* fig. 801 (1971).

*Vern.*: Fringed or White Everlasting. *Distr.*: BCDEJMNSTWZ—also S.A., Tas. (Bass Strait islands), N.S.W.

—Flower-heads much <1" diam., usually *corymbosely clustered*; involucral bracts yellow or golden, all <10 mm. long (very widespread variable perennials) 4

4. Leaves *oblanceolate to obovate*, usually flat, always *cottony* on both surfaces; flower-heads mostly *several* in a dense terminal cluster:

**H. apiculatum** (Labill.) D. Don. in *Mem. Wern. Soc.* 5: 550 (1824).

*Gnaphalium apiculatum* Labill. *Nov. Holl. Plant. Specim.* 2: 43, t. 188 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 243, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 170 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1211 (1957); *Curtis's bot. Mag.* 45: t. 1985, col. (1818), as *Gnaphalium apiculatum*.

*Vern.*: Common Everlasting. *Distr.*: ABCDEFGHJKLMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr.

—Leaves *narrow-linear to oblong* (when broad, widest in lower half), often green and  $\pm$  glabrous on upper surface,  $\pm$  aromatic; flower-heads usually *numerous* in a loose corymbose panicle (rarely few or solitary):

**H. semipapposum** (Labill.) DC. *Prodr.* 6: 195 (1838).

*Gnaphalium semipapposum* Labill. *Nov. Holl. Plant. Specim.* 2: 42, t. 187 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 216, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 171 (1967); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 1, col. (1962); Lee, *Wild Life (Melb.)* 12: 440 (1950); Mass, *Flowers aust. Alps* [19] (1967).

*Vern.*: Clustered Everlasting. *Distr.*: ABCDEFGHJMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[Usually a rigidly erect slender perennial to 2 ft., it varies remarkably in leaf-size degree of hairiness, size and number of heads, appearing to grade into some forms of *H. apiculatum* from which it may not be specifically distinct. Several varieties of both species have been described; but, pending a critical revision of the whole complex, no infra-specific groups have been adopted in the present handbook. M. Gandoger, in *Bull. Soc. bot. France* 65: 44 (1918) segregated and described 5 Victorian "species" from material he had received under the name *H. semipapposum*.]

5. Plant *annual*, almost *glabrous*, <6" tall; stems wiry; leaves distant, *stem-clasping*, lanceolate, 5-12 mm. long; flower-heads scattered, urn-shaped, greenish, 4-5 mm. long, the bracts *without* spreading laminæ; pappus-bristles <10 (sandy tracts of N.W. Mallee):

**H. tepperi** F. Muell. in *Sth. Sci. Rec.* 2: 1 (1882).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1213 (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 375 (1965).

*Vern.*: Everlasting. *Distr.*: ABFG—also W.A., S.A., ? N.S.W.

—Plants *perennial*, usually >6" high; flower-heads >5 mm. long (often >10 mm.); involucre bracts with *spreading yellow or whitish laminæ*

6

6. Flower-heads white, in *corymbose clusters*; outer bracts *on claws* that are almost concealed by dense wool, often pinkish; leaves oblong-lanceolate to obovate, densely white-felted or woolly-cottony, 1-2"

long (robust herb of sandy heaths in W. & N.W., from the western Otway coast to Big Desert; sometimes persisting on cleared land and causing impaction if browsed by stock):

**H. blandowskianum** Steetz ex Sond. in *Linnæa* 25: 512 (1853).

*Vern.*: Woolly Everlasting. *Distr.*: BCDEHJK—also S.A., N.S.W.

—Flower-heads *solitary* at the ends of branches; outer bracts *sessile* 7

7. Involucral bracts all rigid, the outer ones *not wrinkled* or, if slightly so, then the laminæ of intermediate ones *whitish* 9

Outer involucral bracts brownish, papery, conspicuously *wrinkled*, the apices of intermediate ones *yellow*, obtuse and often wrinkled also 8

8. Stems *simple* or branched at the base; large leaves mostly basal, not stem-clasping; peduncles *leafy*; flower-heads usually 2-3 cm. diam.; pappus-bristles 5-7 mm. long (very widespread, but not in alps):

**H. scorpioides** Labill. *Nov. Holl. Plant. Specim.* 2: 45, t. 191 (1806)—ut "*Elichrysum*".

*Illust.*: Labillardière (l.c.); King & Burns, *Wildflowers Tasm.* 53, col. (1969); Hösel, *Wildflowers S.-E. Aust.* 40, col. (1969); Bishop, *Wild Life (Melb.)* 2: 27 (Dec. 1940); Garnet, *Wildflowers Wilson's Prom.* fig. 809 (1971).

*Vern.*: Button Everlasting. *Distr.*: CDEJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Stems often *branched above base*; leaves somewhat stem-clasping; peduncles almost *leafless*; flower-heads 1-1.5 cm. diam.; pappus-bristles 3-4 mm. long (chiefly in highland areas, ascending to alps):

**H. rutidolepis** DC. *Prodr.* 6: 194 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 501, col. (1968).

*Vern.*: Everlasting. *Distr.*: DEJNPRSUVWXZ—also S.A., N.S.W., Qd.

[Lines of demarcation between this species and the commoner *H. scorpioides* are sometimes hazy, and revisional work in the group is desirable.]

9. Leaves 3-10 mm. long (rarely to 15 mm.), quite *obtuse*, green above but white-scurfy beneath; flower-heads white inside, 1-2 cm. diam., shortly pedunculate on much-branched silver-scurfy stems, the outer, thinly papery bracts golden-brown and intermediate white ones *very obtuse*; pappus-bristles 14-20 (frequent on sandy heaths, from Wilson Promontory to the N.W. Mallee, also E. Gippsland):

**H. obtusifolium** F. Muell. & Sond. ex Sond. in *Linnæa* 25: 513 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 20, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 42, col. (1969); Reeves in Garnet, *Vegetation Wyperfeld Nat. Park* 23, also fig. 15 n. 373 (1965); Reeves, *Wild Life (Melb.)* 9: 221 (1947); Garnet, *Wildflowers Wilson's Prom.* fig. 807 (1971).

*Vern.*: Everlasting. *Distr.*: BCDEJKNPTZ—also W.A., S.A., Tas., N.S.W.

- Leaves >20 mm. long; flower-heads 2-4 cm. diam.; outer involucre bracts *not* papery, the intermediate ones often  $\pm$  acute; pappus-bristles >20 10
10. Involucre bracts always *white* inside (sometimes rosy or brownish externally), acute, mainly *linear to narrow-lanceolate*, at least the innermost *clawed* 12
- Involucre bracts usually *golden* (rarely white), the outer ones ovate and often blunt, *not* or hardly *clawed* 11
11. Plant perennial and *rhizomic*; flowering stems *simple*, erect, <1 ft. high, leafy; heads when expanded 3-5 cm. wide, rich golden- to orange-coloured; intermediate bracts *acuminate* (restricted to alpine herb-fields, E. & N. E. from Bennison High Plains to Cobberas etc.):

**H. acuminatum** DC. *Prodr.* 6: 188 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 533, col. (1968); Hurley, *Aust. Plants* 2<sup>19</sup>: 209 (1964); Comber in *J. roy. hort. Soc.*, Lond. 57: fig. 36 opp. 41 (1932); Morcombe, *Aust. Wildflowers* t. on [18], col. (1970).

*Vern.*: Orange Everlasting. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

—Plant often annual, with *tap-root*; flowering stems *branched*, often >1 ft. tall; heads mostly 3 cm. wide or less, pale to bright yellow (rarely white); intermediate bracts  $\pm$  *obtus*e (very widespread, from coast to far N.W. Mallee and alps):

**H. bracteatum** (Vent.) Andr. *Bot. Repos.* 6: sub t. 428 (1805).

*Xeranthemum bracteatum* Vent. *Jard. Malmaison* t. 2, col. (1803).

*Illust.*: Ventenat (l.c.); Hösel, *Wildflowers S.-E. Aust.* 48, col. (1969); Rosser, *Wildflowers Vict.* 87, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1209 (1957); Reeves in Garnet, *Vegetation Wyperfeld Nat. Park* 14 (1965); Reeves, *Wild Life (Melb.)* 2: 26 (Dec. 1940); Brooks, *Aust. Native Plants* t. opp. 96 (1959); Sulman, *Wild Flowers N.S.W.* 2: t. 31 (1914), as *H. lucidum*; Garnet, *Wildflowers Wilson's Prom.* fig. 802 (1971); Everard, *Wild Flowers World* t. 140 fig. E, col. (1970).

*Vern.*: Golden Everlasting. *Distr.*: ABCDEFGHJMNRSVWZ—also W.A., S.A., Tas., N.S.W., Qd, N. Terr., Cent. Aust.

[*H. bracteatum*, as here delimited, is a polymorphic assemblage in which the leaves may vary in width from only 1 mm. to 3 cm. or more; size and colour of heads also vary considerably from place to place. In her *Student's Flor. Tasm.* 2: 331 (1963) Dr. W. M. Curtis adopts the name *H. bicolor* Lindl. for Tasmanian populations with yellow involucres, and resurrects *H. papillosum* Labill. for the stout, glandular, white-headed entity of coasts and islands. The latter is currently known in Victoria as *H. bracteatum* var. *albidum* DC. *Prodr.* 6: 189 (1838), following Bentham's (1867) and Ewart's (1931) treatments. As the var. *albidum* was described from a plant cultivated in Europe, its identity with the coastal population of S.E. Australia remains uncertain; the whole complex at present referred to *H. bracteatum* stands much in need of revisional research. The entity portrayed as *H. viscosum* Sieber ex Spreng. by Burbidge in *Flor. Aust. Cap. Terr.* fig. 384 (1970) almost certainly extends into eastern Victoria. An astonishing range of brilliant

colour forms was developed by the noted East German horticulturists, Herren Ebritsch, at Arnstadt (in Thuringia) and distributed to continental gardens during the 1850's. This must have been among the earliest native Australian subjects of the plant breeder's art.]

12. Stems *unbranched* above their bases; normal leaves basal, lanceolate to  $\pm$  spatulate, 2-4 cm. long, glabrous above silver-scurfy beneath; peduncles *long and leafless*; inner bracts *shortly clawed*, often slightly pleated (slender rhizomic herb of S. Gippsland coasts, with an isolated western occurrence in the Lower Glenelg R. region):

*H. dealbatum* Labill. *Nov. Holl. Plant. Specim.* 2: 45, t. 190 (1806)—ut "*Elichrysum*".

*Illust.*: Labillardière (*l.c.*).

*Vern.*: Everlasting. *Distr.*: ESTW—also Tas.

—Stems  $\pm$  *branched* above the base (not rhizomic); peduncles *leafy*; inner bracts *long-clawed*, never pleated 13

13. Leaves *petiolate*, 5-10 cm. long, 1-3 cm. broad, *lanceolate*, *glabrous* above, loosely white-cottony underneath (herb or semi-shrub to 6 ft. tall, in coastal tracts of Gippsland E. from Orbost):

*H. elatum* A. Cunn. ex DC. *Prodr.* 6: 193 (1838).

*Elichrysum albicans* Sieber ex Spreng. *Syst. Veg.* 3: 482 (1826), non A. Cunn. in Field (1825).

*Illust.*: Reeves, *Wild Life (Melb.)* 5: 47 (1943); Domin, *Bibl. bot., Stuttgart* 22 (Heft 89): 1223 fig. 203 (1929), as *H. albicans*; Banks & Solander, *Ill. Bot. Cook's Voy.* 2: t. 165 (1901), as *H. albicans*.

*Vern.*: Everlasting. *Distr.*: WZ—also N.S.W., Qd.

—Leaves *sessile*, <5 cm. long, <1 cm. broad, *linear or narrowly oblong*, often  $\pm$  *scabrid* above (plants <3 ft. tall) 14

14. Stems (and under-surfaces of leaves) *white-cottony*; involucre bracts narrow, *acuminate*, satiny-white, the innermost *entire*; pappus-bristles  $\pm$  80 (ascending herb, widespread from coast to N.W. Mallee and from foothills to alps):

*H. leucosideum* DC. *Prodr.* 6: 193 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1210 (1957); Galbraith, *Wildflowers Vict.* ed. 3: t. 172 (1967); Fitch in Hooker f., *Flor. Tasm.* 1: t. 59, col. (1856); Bishop, *Wild Life (Melb.)* 2: 27 (Dec. 1940); Nicholls, *Wild Life (Melb.)* 3: 276 (1941).

*Vern.*: Satin Everlasting. *Distr.*: ABCDEFGJKMNPRSTWZ—also W.A., S.A., Tas., N.S.W.

—Stems *scabrous and minutely glandular* but not cottony; apices of innermost involucre bracts conspicuously *fringed or laciniate*; pappus-bristles  $\pm$  25 (far W. from Coleraine to Big Desert, also rocky ground of N.E. alps & subalps):

**H. adenophorum** F. Muell. in *Trans. Vict. Inst.* 38 (1855).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 539, col. (1968)—var. *waddelliae*.

*Vern.*: Everlasting. *Distr.*: BCDRSV—also S.A., N.S.W.

[Alpine and subalpine populations are referable to the very handsome pink-budded var. *waddelliae* J. H. Willis in *Vict. Nat.* 61: 217 (1945), differing from the typical Mallee form in its narrower leaf-bases, which are *not* stem-clasping, and in the *white-cottony* under-surfaces of the leaves.]

15. All the involucre bracts *erect or incurved*, their rounded laminæ *not differentiated* 26  
     Inner involucre bracts with *differentiated* (usually white) laminæ that are often *spreading* or even *reflexed* 16
16. Heads with only 2-7 (rarely 8) florets 22  
     Heads with more than 8 florets 17
17. Leaves narrow-linear, the margins *closely revolute* and lower surfaces beset with a *yellowish resinous exudate*; outer phyllaries woolly; apices of inner phyllaries very narrow, crenulate and  $\pm$  *crumpled*; florets 15-22 (frequent tall shrub of coastal dunes and cliffs, from the Lower Glenelg R. to Mallacoota):

**H. paraliun** (N. T. Burbidge) W. M. Curtis *Student's Flor. Tasm.* 2: 463 (1963).

*H. gunnii* (Hook. f.) Benth. subsp. *paraliun* N. T. Burbidge in *Aust. J. Bot.* 6: 265 (1958);

*H. cinereum* sens. Ewart *Flor. Vict.* 1138 (1931) atque auctt. plur., non *Chrysocoma cinerea* Labill. (1806).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 278, col. (1968); Smith, *Vict. Nat.* 75: 132 (1958), as *H. gunnii*; Lee, *Wild Life (Melb.)* 8: 42 (1946); as *H. cinereum*.

*Vern.*: Coast Everlasting. *Distr.*: EKNPTWZ—also S.A., Tas., N.S.W., Qd.

—Leaves  $\pm$  *flat*, but often with recurved margins, their lower surfaces *not* yellow-resinous; apices of inner phyllaries *never crumpled* (plants strongly and often spicily aromatic) 18

18. Leaves *lanceolate, pointed*, mostly >2 cm. long 20  
     Leaves *broadest above the middle*, either <2 cm. long or very narrowly linear and blunt (slender, sometimes sprawling shrubs of montane to subalpine slopes in E. Highlands) 19
19. Plant *hoary-tomentose*; leaves narrowly *cuneate, subacute*, to 1 cm. long; inflorescences usually copious and *secund* on the main branches:

**H. secundiflorum** N. A. Wakefield in *Vict. Nat.* 68: 49 (1951).

*Illust.*: Reeves in *Vict. Year Book* 76: t. opp. 18 (1964), also in Garnet, *Vict. Nat.* 65: 11 (1948), the latter as *H. thyrsoides*; Mass, *Flowers aust. Alps* [19] (1967); Reeves, *Wild Life (Melb.)* 2: 27 (Dec. 1940), also *ibid.* 5: 61 (1943), as *H. rosmarinifolium* var. *purpurascens*.

*Vern.*: Cascade Everlasting. *Distr.*: RSVWZ—also N.S.W., A.C.T.



—Plant for most part almost or quite *glabrous*; leaves *narrow-linear, blunt*, shiny, 2-5 cm. long:

**H. thyrsoides** (DC.) P. F. Morris & J. H. Willis in *Vict. Nat.* 59: 86 (1942).  
*Ozothamnus thyrsoides* DC. *Prodr.* 6: 165 (1838).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 336 fig. 77 (1963); Dandridge in Burbidge, *Aust. J. Bot.* 6: 274 fig. 10 B (1958).

*Vern.*: Sticky Everlasting. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

20. Outer bracts *hard, whitish* at apices; inner phyllaries *subacute*; branchlets densely tomentose; leaves narrow-lanceolate, to 1" long, usually ferruginous beneath (ranges of E. Gippsland, from Ensay to the N.S.W. border):

**H. conditum** N. A. Wakefield in *Vict. Nat.* 68: 50 (1951).

*Vern.*: Pepper Everlasting. *Distr.*: VWZ—also N.S.W., A.C.T.

—Outer bracts wholly *dull brownish, scarious* or papery; laminæ of inner phyllaries *obtusely*; leaves usually 3-ribbed 21

21. Laminæ of inner phyllaries *long, entire, flat*; leaves to about  $4 \times 1$ "; expanded heads 10-15 mm. wide, usually with >30 florets (extremely viscid shrub of N.E. ranges and subalps, from Mts. Buffalo & Buller to the Cobberas):

**H. stirlingii** F. Muell. in *Vict. Nat.* 6: 166 (1890).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 402, col. (1968); Dandridge in Burbidge, *Aust. J. Bot.* 6: 262 fig. 7 A (1958); Reeves, *Wild Life (Melb.)* 2: 27 (Dec. 1940).

*Vern.*: Ovens Everlasting. *Distr.*: RSVW—also N.S.W., A.C.T.

—Laminæ of inner phyllaries *short, broad, crenulate*; leaves to about  $2 \times \frac{1}{2}$ "; florets <20 per head (sweetly spicy shrub to 6 ft. high, in E. Gippsland where chiefly coastal):

**H. argophyllum** (A. Cunn. ex DC.) N. A. Wakefield in *Vict. Nat.* 68: 50 (1951).

*Cassinia argophylla* A. Cunn. ex DC. *Prodr.* 6: 155 (1838).

*Vern.*: Spicy Everlasting. *Distr.*: WZ—also Tas. (Bass Strait islands), N.S.W.

22. Leaves <1 cm. long; inflorescence a *small terminal cluster*; laminæ of inner bracts *flat* or nearly so; florets 2-5 (rigid alpine shrubs) 25

Leaves usually >1 cm. long; inflorescence a *large corymbose panicle*; spreading laminæ of inner bracts short, broad,  $\pm$  *crinkled*; florets usually 5-7 23

23. Leaves  $\pm$  *erect, narrow-linear*, <3 mm. wide, mucronate, the margins *closely revolute* and upper surfaces *muricate-scabrid*; involucre sometimes tinged with crimson externally; achenes *glabrous*, vertically ribbed (scattered on swampy heaths and along water-courses, from Portland district to E. Gippsland and in headwaters of Murray R.):

**H. rosmarinifolium** (Labill.) Benth. *Flor. aust.* 3: 631 (1867).

*Eupatorium rosmarinifolium* Labill. *Nov. Holl. Plant. Specim.* 2: 38, t. 181 (1806).

*Illust.*: Labillardière (*l.c.*); Dandridge in Burbidge, *Aust. J. Bot.* 6: 252 fig. 5 A (1958); Fitch in Hooker f., *Flor. Tasm.* 1: t. 54 A, col. (1856), as *Ozothamnus rosmarinifolius*.

*Vern.*: Rosemary Everlasting. *Distr.*: DEKNRSTVWZ—also Tas., N.S.W.

—As for the last, but leaves very *widely spreading to reflexed*, blunt, *smooth above* and the dark, *papillose-pubescent achenes* only faintly ribbed at maturity (apparently endemic in Victoria where localized at W. Otways, Mt. Wellington area & N.E. end of Nunniong Plateau):

**H. rogersianum** J. H. Willis in *Muelleria* 1<sup>3</sup>: 158 (1967).

*Vern.*: Everlasting. *Distr.*: KSW.

—Leaves  $\pm$  *flat*, >3 mm. wide, not mucronate, the margins often undulate and upper-surfaces smooth; achenes pubescent 24

24. Flowering branchlets conspicuously *angled*, slightly tomentose; leaves mostly *linear-lanceolate* to narrow linear (broader on Otway coasts), *acute*, *ashen-grey* beneath, mostly >3 cm. long (abundant in moister forests, gullies and damp heaths almost throughout State, sometimes forming a tree to 20 ft. high):

**H. dendroideum** N. A. Wakefield in *Vict. Nat.* 68: 50 (1951).

*Eupatorium ferrugineum* Labill. *Nov. Holl. Plant. Specim.* 2: 38, t. 180 (1806);

*H. ferrugineum* (Labill.) Less. in Steud. *Nom. bot.* ed. 2: 739 (1840), *non* (Lam.) Pers. (1807).

*Illust.*: Labillardière (*l.c.*); Dandridge in Burbidge, *Aust. J. Bot.* 6: 262 fig. 7 B (1958); Ewart, *Handb. For. Trees* t. 225 (1925), as *H. ferrugineum*.

*Vern.*: Tree Everlasting. *Distr.*: DEJKNRSTVWZ—also S.A., Tas., N.S.W.

—Flowering branchlets *terete*, densely tomentose; leaves *cuneate*, very *blunt*, *creamy or yellowish* beneath, <3 cm. long (shrub to 8 ft., frequent through Gippsland, from the Baw Baws to Howe Ranges, with a single disjunct record for Hepburn district where apparently extinct since 1887):

**H. cuneifolium** Benth. *Flor. aust.* 3: 633 (1867).

*H. oblongifolium* J. R. Tovey & P. F. Morris in *Proc. roy. Soc. Vict.* new ser. 35: 195 (1923).

*Vern.*: Wedge-leaf Everlasting. *Distr.*: JSTWZ—also N.S.W.

25. Plant hardly viscid; leaves 4-10 mm. long, *oblong*, *widely spreading*, the midrib *prominent* on under-side; heads very *shortly stalked*, the outer involucre bracts often *rosy-red* (higher alps at Mts. Wellington, Feathertop & Hotham, Bogong High Plains):

*H. alpinum* N. A. Wakefield in *Vict. Nat.* 68: 49 (1951).

*Illust.*: Dandridge in Burbidge, *Aust. J. Bot.* 6: 271 fig. 9 A (1958); Mass, *Flowers aust. Alps* 21 (1967).

*Vern.*: Alpine Everlasting. *Distr.*: SV—also N.S.W.

—Plant viscid; leaves 1-3 mm. long, *triangular-ovate*, *appressed* to stem, the midrib *obscure*; heads sessile, *never reddish* (widespread almost throughout alps, mostly in boggy situations):

*H. hookeri* (Sond.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 626 (1917).

*Ozothamnus hookeri* Sond. in *Linnæa* 25: 509 (1853);

*H. lepidophyllum* (DC., ut *Baccharis* sp.) J. R. Tovey & P. F. Morris in *Proc. roy. Soc. Vict.* new ser. 35: 195 (1923), *non* (Steetz, ut *Ozothamnus* sp.) F. Muell. ex Benth. (1867).

*Illust.*: Dandridge in Burbidge, *Aust. J. Bot.* 6: 280 fig. 11 A (1958); Fitch in Hooker f., *Flor. Tasm.* 1: t. 55 B, col. (1856), as *Ozothamnus hookeri*; Reeves, *Vict. Nat.* 55: t. 14 (1939), also in *Wild Life (Melb.)* 2: 26 (Dec. 1940), as *H. lepidophyllum*.

*Vern.*: Scaly Everlasting (Kerosene Bush). *Distr.*: RSVW—also Tas., N.S.W., A.C.T.

26. Leaves *obovate to obcordate* or broadly elliptic, 3-8 mm. long, *never decurrent*, the upper surfaces quite *smooth* and often lustrous; heads very numerous,  $\pm$  5 mm. long, in large terminal corymbose panicles; involucre bracts *golden*, very convex (frequent almost throughout State, excepting plains and N.W. Mallee):

*H. obcordatum* (DC.) Benth. *Flor. aust.* 3: 632 (1867).

*Ozothamnus obcordatus* DC. *Prodr.* 6: 165 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 316, col. (1968); Dandridge in Burbidge, *Aust. J. Bot.* 6: 258 fig. 6 A (1958); Galbraith, *Wildflowers Vict.* ed. 3: t. 169 (1967); Fitch in Hooker f., *Flor. Tasm.* 1: t. 55 A, col. (1856), as *Ozothamnus obcordatus*.

*Vern.*: Grey Everlasting. *Distr.*: CDHJKMNPRSTVWZ—also N.S.W., Qd.

—Leaves *narrow*, mostly *linear*, with manifest *decurrent lines* from basal margins, the upper surface  $\pm$  *tuberculate* and edges closely revolute; involucre bracts pale *straw-yellow*

27. Involucres almost *globular*, 3-4 mm. long and wide; florets 10-12; leaves *erect*, *appressed*, 2-8 mm. long, with very *broad adnate bases* (rare heath-like shrub, restricted in Victoria to Suggan Buggan district and upper Snowy R. tract of E. Gippsland):

*H. adnatum* (DC.) Benth. *Flor. aust.* 3: 628 (1867).

*Ozothamnus adnatus* DC. *Prodr.* 6: 166 (1838).

*Illust.*: Willis, *Proc. roy. Soc. Qd* 62: t. 7 fig. 22 (1952); Maiden, *Ill. N.S.W. Plants* t. 8 (1907).

*Vern.*: Everlasting. *Distr.*: VW—also N.S.W., ? W.A.

- Involucres *ellipsoid*, <3 mm. wide; leaves *widely spreading*, *not broadened* at base (plants of W., chiefly in Mallee) 28
28. Leaves *flat* or *only slightly revolute* at margins, to 15 mm. long, *retuse* or *prominently cleft* at summit and mostly with recurved apex, the upper surfaces often asperous; corymb of very numerous heads (>40); involucre *abruptly contracted* towards base; florets 9-14 (widely scattered through W., from Bacchus Marsh & Bendigo districts to Little Desert & Jeparit, also Far N.W.):

**H. bilobum** N. A. Wakefield in *Vict. Nat.* 68: 51 (1951).

*H. retusum* (Sond. & F. Muell. ex Sond., ut *Ozothamnus* sp.) F. Muell. *Fragm. Phyt. Aust.* 8: 46 (1873), *non* (Lam.) Spreng. (1826).

*Vern.*: Rough Everlasting. *Distr.*: ABCHJMN—also S.A.

—Leaves almost *terete*, *tightly revolute*, <8 mm. long, recurved but *not retuse* at apex, the decurrent lines on stem *very thick* (almost as wide as leaf itself); corymb with relatively few heads (<30 and often <20); involucre *gradually contracted* towards base; florets  $\pm 10$  (N.W. Mallee areas, from Jeparit into Sunraysia district):

**H. catadromum** N. A. Wakefield in *Vict. Nat.* 68: 51 (1951).

*H. decurrens* (F. Muell., ut *Ozothamnus* sp.) F. Muell. *Fragm. Phyt. Aust.* 8: 46 (1873), *non* Moench (1794).

*Illust.*: Dandridge in Burbidge, *Aust. J. Bot.* 6: 258 fig. 6 B (1958).

*Vern.*: Ridged Everlasting. *Distr.*: ABC—also S.A.

[*H. tuckeri* F. Muell. ex J. H. Willis in *Proc. roy. Soc. Qd* 62: 102, t. 7 fig. 14-20 (1952) is represented in Melbourne Herbarium by a specimen labelled "Wimmera, 1894". No other collection has been made in Victoria since then and, if the species ever did inhabit the Wimmera region, it must long since have become extinct there. It is possible that this 1894 material came actually from N.S.W., where *H. tuckeri* extends as far south as the Wagga Wagga district. Affinities are with *H. adnatum* from which *H. tuckeri* differs in its *dull white*, quite pilular heads and subauriculate leaf-bases. In Ewart's *Flor. Vict.* 1137 (1931) this species was recorded as *H. diotophyllum* F. Muell.—a related but distinct taxon (with *very auriculate* leaf-bases), ranging from central N.S.W. into southern Qd.]

#### PODOSPERMA Labill. (1806)

**P. angustifolium** Labill. *Nov. Holl. Plant. Specim.* 2: 35, t. 177 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 164, col. (1968); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 405 (1965); Hoffmann in Engler & Prantl, *Natürl. Pflfam.* IV 5: 184 fig. 955 (1890)—floret, as *Podotheca angustifolia*.

*Vern.*: Sticky Longheads. *Distr.*: ABCEFNT—W.A., S.A., Tas. (Bass Strait islands), N.S.W.

[If *Podosperma* is to be regarded as an orthographic variant of *Podospermum* DC. (1805), it becomes a later homonym and therefore illegitimate. In 1964, Dr.

Hj. Eichler (Adelaide) proposed that the generic name *Podotheca* Cass. (1822) be conserved against *Podosperma* Labill. With acceptance of this proposal by the International Standing Committee on Nomenclature, the correct name for "Sticky Long-heads" would become *Podotheca angustifolia* (Labill.) Lessing.]

LEPTORHYNCHOS Lessing (1832)—*etymol. orig.*

1. Involucral bracts either densely cottony or ciliate on margins; pappus-bristles <25 3  
Involucral bracts minutely denticulate or somewhat lacinate but *never* ciliate or cottony; pappus-bristles 25-40 2
2. Vestiture *cottony*; leaves linear, 1-2" long; laminæ of involucral bracts firm, dilated, *ovate to ± orbicular*, yellow-brownish and shiny, much broader than the scabrous claw; achenes with *short thin beaks* (near-coastal tracts of Gippsland from Wilson Prom. eastwards, with isolated western occurrences near Anglesea and in S. Grampians):

*L. linearis* Lessing *Syn. Gen. Compos.* 273 (1832).

*Vern.*: Shiny Buttons. *Distr.*: DKPTWZ—also Tas., ? N.S.W.

—Vestiture sparse, *glandular*; leaves linear-lanceolate, 1-3" long; florets *white* to pale creamy yellow; outer involucral bracts *lanceolate*, scarious, the inner ones *linear* and scabrous; achenes *tapering gradually* into a prominent *thick papillose beak* (*perennial* 12-18" tall, scattered through open tracts of W., also Upper Murray R., Omeo & Wulgulmerang districts):

*L. elongatus* DC. *Prodr.* 6: 160 (1838).

*Vern.*: Lanky Buttons. *Distr.*: BCEGJMNTVW—also ?W.A., Tas., N.S.W., A.C.T.

—As for the last, but an *annual* with relatively longer (3-6") *leafless peduncles*, *bright yellow* florets and achenes *narrowed abruptly* into a *slender beak* at least as long as achene (far W., in Coleraine district & Wimmera):

*L. medius* A. Cunn. ex DC. *Prodr.* 6: 160 (1838).

*L. elongatus* DC. var. *peduncularis* Benth. *Flor. aust.* 3: 610 (1867).

*Vern.*: Buttons. *Distr.*: CD—also W.A., S.A., N.S.W.

3. Leaves often *narrow-linear* and <2 mm. wide (if broader, then pappus-bristles not >12), almost *pungent-pointed*, their upper surfaces *not* or hardly *glandular*; achenes not or very shortly beaked 5  
Leaves *oblanceolate to linear-oblong*, mostly >2 mm. wide, their under-surfaces (as well as the stems) loosely cottony and upper-surfaces scabrous with short stout *crooked glandular hairs*; pappus-bristles 12-20 4
4. Involucral bracts *ovate*, *very obtuse*, flat, with bristly fringe, the surface scabrous but *not cottony*; achenes *papillose*, *distinctly beaked* (scattered through farther W. districts, chiefly in Mallee):

*L. waitzia* Sond. in *Linnæa* 25: 501. (1853).

*Vern.*: Button Immortelle. *Distr.*: ABCGHJKM—also S.A., N.S.W.

—Involucral bracts *very narrow, imbedded in cottony wool* that arises from their margins, wrinkled, the apex acuminate and twisted; achenes *glabrous, not beaked* (a rare endemic, confined to Lorne district in Otways):

*L. gatesii* (H. B. Williamson) J. H. Willis in *Vict. Nat.* 73: 200 (1957).

*Helichrysum gatesii* H. B. Williamson in *Proc. roy. Soc. Vict.* new ser. 35: 24, t. 5 (1922).

*Illust.*: Williamson (*l.c.*).

*Vern.*: Wrinkled Buttons. *Distr.*: K.

- |   |   |
|---|---|
| 5. Pappus-bristles of bisexual florets 4-7; peduncles filiform  | 7 |
| Pappus-bristles of bisexual (inner) florets 8-16  | 6 |
| 6. Plant slightly cottony, sparsely villous or almost glabrous; leaves 1.5-3.5 cm. long, narrowly oblanceolate (often oblong in alps); peduncles scaly; involucral bracts conspicuously fringed, pointed, the lamina not or hardly pubescent; pappus-bristles 8-12 in bisexual florets, 4-6 in females (frequent almost throughout State, excepting N.W. Mallee): |   |

*L. squamatus* (Labill.) Lessing *Syn. Gen. Compos.* 273 (1832).

*Chrysocoma squamata* Labill. *Nov. Holl. Plant. Specim.* 2: 40, t. 184 (1806).

*Illust.*: Labillardière (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 46, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 168 B (1967); *Curtis's bot. Mag.* 64: t. 3625, col. (1837), as *Chrysocoma squamata*; Bishop, *Wild Life (Melb.)* 4: 369 (1942); Burbidge, *Flor. Aust. Cap. Terr.* fig. 382 (1970).

*Vern.*: Scaly Buttons. *Distr.*: CDEHJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Plant *cottony-woolly* all over; leaves *narrow-linear*; peduncles almost *naked*; involucral bracts *cottony* on the lamina but *hardly fringed*, *blunt* and  $\pm$  wrinkled at apex; pappus-bristles 12-16 (rare, on basaltic plains W. of Melbourne, at Echuca, Dimboola district and far N.W.):

*L. panætioides* (DC.) Benth. *Flor. aust.* 3: 609 (1867).

*Helichrysum panætioides* DC. *Prodr.* 6: 194 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 134, col. (1965).

*Vern.*: Woolly Buttons. *Distr.*: ACMN—also N.S.W.

7. Habit *perennial*; leaves *very narrow-linear*, with *revolute margins* and *glabrous* upper-surfaces; phyllaries *woolly*; pappus-bristles of bisexual florets 5-7, those of female florets usually *lacking*; achenes *glabrous* (widespread except in Mallee, alps and on N. plains):

*L. tenuifolius* F. Muell. *Fragm. Phyt. Aust. 1*: 52 (1858).

*Vern.*: Wiry Buttons. *Distr.*: DEHJMNPRVW—also S.A.

—Habit *annual*; leaves  $\pm$  *flat*, the margins normally not much recurved (but *revolute* when dry), the upper-surfaces (and stems) *sparsely villous*; phyllaries hardly woolly; pappus-bristles of bisexual florets 4, those of females 3; achenes *papillose* (scattered through farther W. & N.W., in open country):

*L. tetrachætus* (Schlechtendal) J. M. Black in *Trans. roy. Soc. S. Aust.* 45: 19 (1921).

*Doratolepis tetrachæta* Schlechtendal in *Linnæa* 20: 593 (1847).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1214 (1957).

*Vern.*: Beauty Buttons. *Distr.*: ABCGHJM—also S.A.

### WAITZIA J. Wendl. (1810)

*W. acuminata* Steetz in *Lehm. Plant. Preiss.* 1: 453 (1845).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 171, col. (1968); Chaffer in *Etruscan* (Bank N.S.W.) 11: Cover, col. (Sept.-Dec. 1962); Engler & Drude, *Vegetation Erde* 7: 225 (1906); *Gartenflora* 12: t. 401, col. (1863); Fitch in *Curtis's bot. Mag.* 90: t. 5443, col. (1864), as *W. corymbosa*; Morcombe, *Wildflowers North & Centre* 96, col. (1970).

*Vern.*: Orange Immortelle. *Distr.*: ABF—also W.A., S.A., N.S.W., Cent. Aust.

### MILLOTIA Cass. (1829)

1. Leaves  $\pm$  *oblanceolate*; corolla-lobes 5, *acute*; anthers *oblong*, 0.6-1.5 mm. long, their tips *prominently exerted* at anthesis; achenes 4-8 mm. long, protruding far beyond involucre at maturity; indumentum of white woolly hairs only (widespread in farther W. & N.W., from Maryborough to Little Desert and into far N.W. Mallee):

*M. myosotidifolia* (Benth.) Steetz in *Lehm. Plant. Preiss* 1: 457 (1845).

*Senecio myosotidifolius* Benth. in *Endl. et al. Enum. Plant. Hueg.* 66 (1837).

*Illust.*: Schodde, *Trans. roy. Soc. S. Aust.* 87: 217 fig. 1 (1963).

*Vern.*: Broad-leaf Millotia. *Distr.*: ABCDFHJ—also S.A., N.S.W.

—Leaves *linear* (often very narrow); corolla-lobes 3-4,  $\pm$  *obtuse*; anthers *elliptic*, <0.5 mm. long, their tips *enclosed or barely protruding* from corolla

2. Indumentum a *mixture* of woolly and straight hairs; achene <7 mm. long, its beak  $\pm$  *level* with top of mature involucre; pappus-bristles 20-30 (or more), finely *barbellate*, slightly longer than corolla (widespread throughout W. but not in farther N.W., also Rushworth, Marysville and Beaumaris districts):

*M. tenuifolia* Cass. in *Ann. Sci. nat. ser. 1*, 17: 417 (1829).

*Illust.*: Schodde, *Trans. roy. Soc. S. Aust.* 87: 232 fig. 7 (1963); Black, *Flor. S. Aust.* ed. 2: fig. 1215 (1957).

*Vern.*: Soft Millotia. *Distr.*: ACDEGHJMNS—also W.A., S.A., Tas., N.S.W.

—Indumentum of dense *woolly hairs only*; achene usually  $\pm$  10 mm. long, its beak *protruding manifestly* above the mature involucre; pappus-bristles 15-20, *almost plumose*, much *shorter* than corolla (far N.W. Mallee):

*M. macrocarpa* R. Schodde in *Trans. roy. Soc. S. Aust.* 87: 228, 230 fig. 6 (1963).

*Illust.*: Schodde (*l.c.*); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 391 (1965).

*Vern.*: Large-fruited Millotia. *Distr.*: AB—also S.A., ? N.S.W.

#### QUINETIA Cass. (1830)

*Q. urvillei* Cass. in *Dict. Sci. nat.* 60: 591 (1830).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1216 (1957).

*Vern.*: Quinetia. *Distr.*: CDJ—also W.A., S.A.

#### RUTIDOSIS DC. (1838)

1. Plant a small *glabrous annual* to 2" high; leaves linear,  $\pm$  fleshy, <1 cm. long, scattered along stems, the lower ones usually opposite; flower-heads several together, *sessile* in a cluster among the floral leaves, *whitish*, 2-3 mm. long, the minute bracts (10-15) ovate to orbicular; pappus of 7-11 obovate scales (frequent on open sandy ground of lowlands almost throughout State):

*R. multiflora* (Nees) B. L. Robinson in *Proc. Amer. Acad. Arts Sci.* 47: 206 (1911).

*Styloncerus multiflorus* Nees in *Lehm. Plant. Preiss.* 2: 244 (1848);

*R. Pumilo* Benth. *Flor. aust.* 3: 595 (1867):

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1217 (1957); Fitch in Hooker f., *Flor. Tasm.*

1: t. 53 B, col. (1856), as *Pumilio argyrolepis*; Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 184 fig. 95  $\gamma$  (1890)—floret, as *R. Pumilo*.

*Vern.*: Small Wrinklewort. *Distr.*: BCDEHJMNP RW—also W.A., S.A., Tas., N.S.W.

—Plant perennial, >6" tall, leaves alternate, never fleshy, >1 cm. long (those at base 3-10 cm.); flower-heads on *long peduncles* (of >2 cm.), *yellow*, 6-10 mm. long

2. Stems and foliage almost *glabrous* or slightly glandular, never cottony; involucre bracts *dull, greenish*, the margins sometimes minutely denticulate or  $\pm$  lacerated but *not ciliate*; pappus of 10-15 *acuminate, narrow-linear, plumose scales longer than the achene* (apparently



a local rarity, and in danger of extinction—on Keilo basalt plains near Melbourne, also at Craigie near Maryborough):

**R. leptorrhynchoides** F. Muell. *Fragm. Phyt. Aust.* 5: 148 (1866).

*Illust.*: Lee, *Wild Life (Melb.)* 12: 440 (1950); Burbidge, *Flor. Aust. Cap. Terr.* fig. 380 (1970).

*Vern.*: Button Wrinklewort. *Distr.*: JN—also N.S.W., A.C.T.

—Stems and foliage *densely white-cottony*; involucre bracts *shiny, pale golden*, transversely *wrinkled*, *ciliate* on margins; pappus of 4-6 *spatulate scales about as long as achene* (N.W. Mallee and uncommon):

**R. helichrysoides** DC. *Prodr.* 6: 159 (1838)—ut "*R. helichrysoides*."

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 406 (1965).

*Vern.*: Grey Wrinklewort. *Distr.*: B—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

### TOXANTHES Turcz. (1851)—*etymol. orig.*

Plant *glandular-pubescent*, pale green, ascending, usually 1-2" high; involucre bracts *remaining erect*; achenes 4-5 mm., *twice* the length of corolla, *glandular-hairy* (widespread on open sandy ground of lowlands in W. & N.W.):

**T. muelleri** (Sond.) Benth. *Flor. aust.* 3: 592 (1867).

*Anthocerastes muelleri* Sond. in *Linnaea* 25: 480 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 315, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1218 (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 413 (1965); Hayward & Druce, *Advent. Flor. Tweed-side* 109 (1919).

*Vern.*: Common Bow-flower. *Distr.*: ABCFHJMN—also W.A., S.A., ? N.S.W.

Plant  $\pm$  *cottony-woolly*, often purplish, <1" high, frequently *mat-forming*; involucre bracts *becoming recurved*; achenes  $\pm$  3 mm. long, about *same length* as corolla, striated but *not glandular* (sandy tracts of farther W. & N.W., especially in Mallee):

**T. perpusilla** Turcz. in *Bull. Soc. Nat. Moscou* 24<sup>1</sup>: 177 (1851).

*Illust.*: Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 184 fig. 95 z (1890)—floret & stigmas.

*Vern.*: Tiny Bow-flower. *Distr.*: ABCHJM—also W.A., S.A., N.S.W.

### CALOMERIA Vent. (1804)

**C. amaranthoides** Vent. *Jard. Malmaison* 2: t. 73 (Oct. 1804).

*Humea elegans* Sm. *Exotic Botany* 1: t. 1 (Dec. 1804).

*Illust.*: Ventenat (*l.c.*); Smith (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 480, col. (1968); Hammet, *Vict. Nat.* 55: t. 12 (1939),

also *ibid* 78: 286 (1962), as *Humea elegans*; Reeves, *Wild Life* (Melb.) 5: 44 (1943), as *H. elegans*; Mort in Sulman, *Wild Flowers* N.S.W. 2: t. 34 (1914), as *H. elegans*; Spencer & French, *Vict. Nat.* 6: fig. 4 opp. 18 (1889), as *H. elegans*; *Gartenflora* 22: 280 (1873), as *H. elegans*.

*Vern.*: Incense Plant (Plume Humea). *Distr.*: CDHJTWZ—also N.S.W.

### HÆCKERIA F. Muell. (1852)

Plant *glabrous*,  $\pm$  *sticky*; leaves *oblong-lanceolate*, obtuse, 1-4 mm. long, *closely appressed* to the branches; involucre bracts *white, opaque, dull*, in  $\pm$  4 series and *very unequal* (sand-hills of N.W. Mallee, also Little Desert & Victoria Range in Grampians):

*H. pholidota* (F. Muell.) J. H. Willis in *Muelleria* 1<sup>3</sup>: 162 (1967).

*Ozothamnus pholidotus* F. Muell. *Fragm. Phyt. Aust.* 2: 131 (1861);

*Humea pholidota* (F. Muell.) J. M. Black in *Trans. roy. Soc. S. Aust.* 43: 43 (1919).

*Illust.*: Garnet, *Vegetation Wyperfeld Nat. Park* fig. 12 n. 384 (1965), as *Humea pholidota*.

*Vern.*: Scaly Hæckeria. *Distr.*: BCDG—also S.A., N.S.W.

Plant *glandular-pubescent*, sometimes also *cottony*, aromatic; leaves *narrow-linear*, 30-80 mm. (1-3") long, *widely spreading*; involucre bracts *straw-yellow, translucent, shining*, in 2-3 series and  $\pm$  *equal* (rocky hills of N. & N.E., from Whipstick Scrub near Bendigo to Warby Range & Pine Mountain):

*H. ozothamnoides* F. Muell. in *Trans. phil. Soc. Vict.* 1: 45 (1855).

*Humea ozothamnoides* (F. Muell.) F. Muell. *Fragm. Phyt. Aust.* 1: 17 (1858).

*Illust.*: Mueller, *Key Syst. Vict. Plants* 2: fig. 85 (1886), as *Humea ozothamnoides*; Mueller, *Plants indig. Colon. Vict.* t. 44 (1864-65), as *Humea ozothamnoides*.

*Vern.*: Cottony Hæckeria. *Distr.*: MNRSVW—also N.S.W.

### IXODIA R. Br. (1812)

*I. achilleoides* R. Br. in Ait. f. *Hort. kew.* ed. 2, 4: 517 (1812).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants* *Vict.* t. 17, col. (1968); Galbraith, *Wildflowers* *Vict.* ed. 3: t. 161 (1967); Black, *Flor. S. Aust.* ed. 2: fig. 1219 (1957); Edwards in *Curtis's bot. Mag.* 37: t. 1534, col. (1813).

*Vern.*: *Ixodia*. *Distr.*: BCDEGJKPR—also S.A.

[Victorian populations are referable to the var. *alata* (Schlechtendal, *ut sp.*) Ewart *Flor. Vict.* 1144 (1931), distinguished by its broader leaves (often 5-10 mm. wide) with more decurrent fin-like bases and rather larger flower-heads (usually 8-12 mm. wide when the ray is fully expanded), but there seems to be no sharp line of demarcation between var. *alata* and the typical form (Eyre Peninsula, S. Aust.).]

## ATHRIXIA Ker (1823)

*A. athrixioides* (Sond. & F. Muell. ex Sond.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 607 (1917).

*Panætia athrixioides* Sond. & F. Muell. ex Sond. in *Linnaea* 25: 506 (1853);

*A. tenella* Benth. *Flor. aust.* 3: 600 (1867).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1221 (1957).

*Vern.*: Wirewort. *Distr.*: BG—also W.A., S.A.

## PODOLEPIS Labill. (1806)

1. Flower-heads much wider than 1 cm. (often 2 cm. or more); florets *very numerous*, the peripheral ones with long conspicuous ligules by far exceeding the disk florets. 3

Flower-heads up to 1 cm. wide; florets *few* (<20), the peripheral ones hardly exceeding those of the disk. 2

2. Almost *glabrous annual*, 6-16" high (rarely >10"); cauline leaves *obtusish*, <2 mm. broad (larger rosette leaves of seedling stage withering away before anthesis); heads 6 to 100 or more, on *naked filiform peduncles*; involucre 4-7 mm. long, yellow-brown; bracts *obtuse, shining, not rugose* (sand-hills of N.W. Mallee):

*P. capillaris* (Steetz) Diels in *Bot. Jb.* 35: 621 (1904).

*Siemssenia capillaris* Steetz in *Lehm. Plant. Preiss.* 1: 467 (1845).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 81: 271 fig. 110-117 (1957); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 15 n. 404 (1965).

*Vern.*: Wiry Podolepis. *Distr.*: ABFG—also W.A., S.A., Cent. Aust., N.S.W., Qd.

—Tomentose *perennial*, 1-3 ft. high; cauline leaves *acuminate*, 5-15 mm. broad; heads almost *sessile*, in clusters of 3-10 at ends of branches; involucre  $\pm$  10 mm. long, reddish-brown; bracts *acute, strongly and transversely rugose* (Kulkyne Nat. Forest and apparently very rare or extinct):

*P. arachnoidea* (Hook.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 640 (1917).

*Rutidosis arachnoidea* Hook. in *Mitch. J. trop. Aust.* 341 (1848).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W.* 81: 276 fig. 126-133 (1957).

*Vern.*: Cottony Podolepis. *Distr.*: A—also S.A., N.S.W., Qd.

3. Laminæ of bracts *transversely rugose* (herbs of far W.) 6  
Laminæ of involucre bracts  $\pm$  *smooth*, never transversely rugose (perennials) 4
4. Laminæ of intermediate bracts *shorter than* their very glandular claws (which are partly or wholly exposed by the loose arrangement of bracts); heads 3-20, rather densely clustered at end of scape (montane to subalpine parts of E. Gippsland, also Mt. Buffalo):

*P. hieracioides* F. Muell. *Fragm. Phyt. Aust. 1*: 112 (1859).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W. 81*: 256 fig. 25-32 (1957); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 143, col. (1971).

*Vern.*: Long Podolepis. *Distr.*: RVWZ—also N.S.W., A.C.T.

—Lamina of intermediate bracts *equal to or longer than* their claws 5

5. Plant *sparsely woolly* or hispid; radical leaves linear to oblanceolate, <2 cm. wide, with flat margins; heads usually *solitary*, to 3 cm. wide and 2 cm. long; apices of innermost bracts  $\pm$  *acuminate* (almost throughout State, excepting far N.W. Mallee and N. plains):

*P. jaceoides* (Sims) Voss in *Vilmorin Blumeg.*, ed. 3 Sieb. & Voss, *1*: 537 (1894)  
—*in obs.*

*Scalia jaceoides* Sims in *Curtis's bot. Mag. 24*: t. 956, col. (1806);

*P. acuminata* R. Br. in *Ait. f. Hort. kew. ed. 2, 5*: 82 (1813).

*Illust.*: Edwards in *Curtis's bot. Mag. (l.c.)*; Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 52, col.* (1968); Davis, *Proc. Linn. Soc. N.S.W. 81*: 251 fig. 2-8 (1957); Galbraith, *Wildflowers Vict. ed. 3*: t. 174 (1967); Maiden & Campbell, *Flowering Plants & Ferns N.S.W. pt. 6*: t. 24, col. (1897), as *P. acuminata*.

*Vern.*: Showy Podolepis. *Distr.*: BCDHFJMN RVSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd.

—Plant with *copious loose wool* (at least distally); radical leaves oblong to spatulate, 2-4.5 cm. broad, with crinkled margins; heads 5-11 in a  $\pm$  *dense terminal cluster*, each about 2.5 cm. wide and 1.5 cm. long; apices of bracts *obtus*e (wholly alpine, from Baw Baws to Mt. Buffalo, Bogongs and sources of Murray R.):

*P. robusta* (Maiden & Betche) J. H. Willis in *Vict. Nat. 70*: 224 (1954).

*P. longipedata* A. Cunn. ex DC. var. *robusta* Maiden & Betche in *Proc. Linn. Soc. N.S.W. 23*: 12 (1898).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict. t. 543, col.* (1968); Mass, *Flowers aust. Alps* [19] (1967); Davis, *Proc. Linn. Soc. N.S.W. 81*: 251 fig. 9-16 (1957); Burbidge, *Flor. Aust. Cap. Terr. fig. 381* (1970).

*Vern.*: Alpine Podolepis. *Distr.*: RSVW—also N.S.W., ACT.

6. Annual; stems *much branched*; cauline leaves 5-15 mm. broad; laminæ of bracts *slightly wrinkled, shining*, their apices *acute* (scattered through Mallee from Swan Hill to Pine Plains, also Murtoa district):

*P. canescens* A. Cunn. ex DC. *Prodr. 6*: 163 (1838).

*Illust.*: Davis, *Proc. Linn. Soc. N.S.W. 81*: 260 fig. 41-48 (1957); Morcombe, *Aust. Wildflowers* t. on [62], col. (1970).

*Vern.*: Grey Podolepis. *Distr.*: ABCG—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Perennial; stems *little branched*; cauline leaves usually <5 mm. wide; laminæ of bracts *deeply rugose, not shining, obtuse* at apex (far S.W. at Gorae & Lower Glenelg R., also far N.W. Mallee):

*P. rugata* Labill. *Nov. Holl. Plant. Specim.* 2: 57, t. 208 (1806).

*Illust.*: Labillardière (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1220 (1957); Davis, *Proc. Linn. Soc. N.S.W.* 81: 266 fig. 66-74 (1957).

*Vern.*: Pleated Podolepis. *Distr.*: ABE—also W.A., S.A.

### \*INULA L. (1753)

\**I. graveolens* (L.) Desf. *Flor. atlant.* 2: 275 (1799).

*Erigeron graveolens* L. *Cent. I. Plant.* 28 (1755).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 132, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1222 (1957); Gardner in Meadly, *Weeds W. Aust.* 140 col., 141 (1965); Gardner in Meadly, *J. Dep. Agric. W. Aust.* ser. 4, 6: 435 col., 436 (1965); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 37, col. (1958); Richardson, *J. Dep. Agric. S. Aust.* 56: 350-51 (1953); Maiden, *Weeds N.S.W.* 89 (1920); Wauer in Ewart, *Weeds . . . Vict.* t. opp. 40, col. (1909); Burbidge, *Flor. Aust. Cap. Terr.* fig. 385 (1970).

*Vern.*: Stinkwort. *Distr.*: ABCDEFHJMNPRSVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

### MYRIOCEPHALUS Benth. (1837)

Stems *spreading*, <3" long; leaves *narrow-linear*, 2-7 cm. long, with *broad stem-sheathing bases*, the uppermost forming an involucre around the *sessile* compound heads; outermost bracts *woolly*, the small *hyaline tips erect*; partial heads 1-flowered; pappus of a *single fine bristle* (frequent on temporarily damp flats of Cent., N., N.W. & W. districts):

*M. rhizocephalus* (DC.) Benth. *Flor. aust.* 3: 557 (1867).

*Hyalolepis rhizocephala* DC. *Prodr.* 6: 149 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 136, col. (1965); Engler & Drude, *Vegetation Erde* 7: 164 (1906); Wawra, *Itin. Princ. Saxe-Coburg* 2: t. 7 (1888).

*Vern.*: Woolly-heads. *Distr.*: ABCDEFHJMNR—also W.A., S.A., N.S.W., Qd.

Stems *erect*, 1-2 ft. high, *glandular-pubescent*; leaves *linear to lanceolate*, those on the peduncles bract-like; compound heads *pedunculate*, 1-2" wide, the numerous outer bracts with *white, opaque, radiating* laminae; partial heads with 5-8 yellow flowers; pappus of 8-13 bristles (sand-hills of N.W. Mallee where often seasonally prolific):

*M. stuartii* (F. Muell. & Sond. ex Sond.) Benth. *Flor. aust.* 3: 560 (1867).

*Polycalymma stuartii* F. Muell. & Sond. ex Sond. in *Linnæa* 25: 494 (1853).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 148, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 162 (1967); Chippendale, *Wildflowers Cent. Aust.* 101, col. (1968); Reeves in Barrett, *Aust. Wildflower Book* t. opp. 156 (1942), as "Ham & Eggs Daisy"; Mueller, *Key Syst. Vict. Plants* 2: fig. 86 (1886); Mueller, *Plants indig. Colon. Vict.* t. 42 (1864-65), as *Poly-*

*calymma stuartii*; *Wild Flowers Aust.* (Shell Oil Co.) 12 (? 1931); *Gartenflora* 31: 187 (1882).

*Vern.*: Poached-eggs Daisy (Ham-and-eggs Daisy). *Distr.*: ABCF—also S.A., N.S.W., Qd, Cent. Aust.

### ANGIANTHUS J. Wendl. (1810)

1. Compound flower-heads  $\pm$  globular (with flat or convex receptacle), exceeded by the subtending floral leaves 5  
Compound flower-heads forming compact cylindrical spikes (with terete receptacle), the subtending leaves small or lacking; bracts shiny and usually golden or bronzy 2
2. Vestiture  $\pm$  papillose (of short scale-like hairs); leaves linear-oblong, obtuse; pappus a minute crown or absent 4  
Vestiture cottony or woolly; leaves linear,  $\pm$  acute; pappus usually conspicuous 3
3. Stems erect or ascending; compound heads 5-7 mm. thick, obtuse at base; pappus of 3-4 ovate denticulate scales, each terminated by a slightly plumose bristle (W. Mallee, from Dimboola district to Hattah Lakes Nat. Park & Boundary Point in extreme N.W.):

*A. tomentosus* J. Wendl. *Coll. Plant.* 2: 31, t. 48 (1810).

*Illust.*: Wendland (*l.c.*); Pelloe, *Wildflowers W. Aust.* t. 6 fig. 10, col. (1921).

*Vern.*: Hairy Angianthus (Camel-grass—W.A.). *Distr.*: ABCF—also W.A., S.A., N.S.W., Cent. Aust.

—Stems procumbent; compound heads 4-5 mm. thick, slightly contracted at base; pappus an irregularly toothed annular cup (scattered through Mallee where apparently uncommon):

*A. brachypappus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 44 (1855).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1224 (1957)—var. *conocephalus*.

*Vern.*: Spreading Angianthus. *Distr.*: CG—also W.A., S.A., N.S.W., Qd.

4. Stems 2-6" high, corymbosely branched; compound heads yellow, attenuated at base; pappus a minute jagged crown, deciduous together with corolla (N.W. Mallee, from Wyperfeld & Hattah Lakes Nat. Parks to Boundary Point in extreme N.W.):

*A. pusillus* (Benth.) Benth. *Flor. aust.* 3: 564 (1867).

*Crossolepis pusilla* Benth. in Endl. et al. *Enum. Plant. Hueg.* 61 (1837).

*Illust.*: Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 194 fig. 98 c-g (1890).

*Vern.*: Dwarf Angianthus. *Distr.*: AB—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Stems 1-2" high; compound heads greenish-brown, obtuse at base; pappus absent (Little & Big Deserts):

*A. tenellus* (F. Muell.) Benth. *Flor. aust.* 3: 564 (1867).

*Chrysocoryne tenella* F. Muell. in *Trans. Vict. Inst.* 130 (1855);

*Crossolepis pusilla* Hook. *Icon. Plant.* 5: t. 413 (1842), *non* Benth. (1837).

*Illust.*: Hooker (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1228 (1957).

*Vern.*: Slender Angianthus. *Distr.*: C—also W.A., S.A., Cent. Aust.

5. Plant *prostrate*; stems filiform, *glabrous*, *reddish* and glossy; leaves almost filiform, glabrous,  $\pm$  10 mm. long or more; compound heads *depressed-globular*, almost completely *concealed* (as are the floral leaves) in a dense white-woolly indumentum and appearing like floccules of wool; pappus of 8-12 *barbellate bristles* (open sandy flats of far N.W. Mallee):

*A. burkittii* (Benth.) J. M. Black *Flor. S. Aust.* 645 (1929).

*Gnephosis burkittii* Benth. *Flor. aust.* 3: 570 (1867).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1227 (1957).

*Vern.*: Wires-and-wool. *Distr.*: A—also W.A., S.A., N.S.W.

—Plant *erect*, to 6" high,  $\pm$  *cottony* on stems and foliage; leaves 3-5 mm long, those beneath the  $\pm$  *obovoid compound heads* exceeding the indumentum; pappus *none* 6

6. Leaves oblong-linear; floral leaves *straight*, *lanceolate*; partial heads normally with 2 florets and 4 bracts; corolla 4-toothed (saline marsh and salt-pans, both inland and coastal, from Little Desert to Spermin Whale Head):

*A. preissianus* (Steetz) Benth. *Flor. aust.* 3: 566 (1867).

*Skirrophorus preissianus* Steetz in *Lehm. Plant. Preiss.* 1: 439 (1845).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 197, col. (1968); Lee, *Vict. Nat.* 65: 177 (1948); Fitch in Hooker, *Flor. Tasm.* 1: t. 53 A, col. (1856), as *Skirrhophorus eriocephalus*; Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 194 fig. 98 A (1890).

*Vern.*: Salt Angianthus. *Distr.*: CDJNPW—also W.A., S.A., Tas., N.S.W.

—Leaves narrow-linear, mucronate; floral leaves *recurved*, *narrow-linear*; partial heads with 1 floret and 2 bracts; corolla 5-toothed (W. districts generally, from Whipstick Scrub near Bendigo to Lower Glenelg R. and far N.W. Mallee):

*A. strictus* (Steetz) Benth. *Flor. aust.* 3: 568 (1867).

*Pogonolepis stricta* Steetz in *Lehm. Plant. Preiss.* 1: 440 (1845).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1226 (1957).

*Vern.*: Stiff Angianthus. *Distr.*: ABCEGHJM—also W.A., S.A., N.S.W.

#### \* GNEPHOSIS Cass. (1820)

Plant sparsely hairy,  $\pm$  3" high; leaves *lanceolate*; clusters of flower-heads with 5-8 *leaf-like bracts* outside the common involucre of scarious bracts;

partial heads with 9 bracts, the 3 broader inner ones more deciduous (apparently endemic, along Wimmera R. flood-plain at Dimboola, Antwerp & Jeparit):

*G. baracchiana* Ewart & J. White in *Proc. roy. Soc. Vict.* new ser. 21: 542, t. 30 fig. 3-8 (1909).

*Illust.*: Ewart & White (*l.c.*).

*Vern.*: Dwarf Gnephosis. *Distr.*: C.

Plant *universally cottony or woolly*; leaves *narrow-linear*; clusters of flower-heads with a general involucre entirely of *scarious, densely cottony bracts*; partial heads with 6-8 bracts, all being deciduous (apparently very rare, in Murray Mallee of far N.W.):

*G. skirrophora* (Sond. & F. Muell. ex Sond.) Benth. *Flor. aust.* 3: 570 (1867).  
*Trichanthodium skirrophorum* Sond. & F. Muell. ex Sond. in *Linnæa* 25: 490 (1853).

*Vern.*: Woolly Gnephosis. *Distr.*: A—also W.A., S.A., N.S.W.

#### ERIOCHLAMYS Sond. & F. Muell. ex Sond. (1853)

*E. behrii* Sond. & F. Muell. ex Sond. in *Linnæa* 25: 488 (1853).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 126, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1229 (1957).

*Vern.*: Woolly Mantle. *Distr.*: ACM—also W.A., S.A., N.S.W., Qd.

#### CALOCEPHALUS R. Br. (1817)

1. Plant *annual*, cottony, <4" high; leaves greyish, *all spreading*, narrow-linear, 1-3 cm. long, the uppermost *longer than* the cudweed-like inflorescence; involucre bracts *without* petaloid laminæ, united by their woolly-ciliate margins; florets *purplish-red* (frequent from Wimmera to far N.W. Mallee, also Graytown area near Nagambie):

*C. drummondii* (A. Gray) Benth. *Flor. aust.* 3: 574 (1867).

*Blennospora drummondii* A. Gray in *Hook. J. Bot. & Kew Gdns Misc.* 3: 172 (1851).

*Vern.*: Dwarf Beauty-heads. *Distr.*: ABCFM—also W.A., S.A., ? N.S.W.

—Plant *perennial* or, if sometimes annual, then >4" tall; upper leaves small, *appressed to the stem*, never exceeding the inflorescence, florets *yellow*

2. Stems *divaricately branched in upper part*, leaves *alternate*  
Stems *branching only at base*, then erect and usually simple; leaves mostly *opposite* (excepting uppermost few); bracts with short petaloid laminæ
3. Leaves *oblong-ob lanceolate*, broader *in upper half*, *obtuse*, with somewhat camphoraceous aroma; stems *ascending*; flower-heads *white*



(widespread on damp flats of W. districts from Wimmera to Port Philip Bay, also Philip Id & Sperm Whale Head):

**C. lacteus** Lessing *Syn. Gen. Compos.* 271 (1832).

*Illust.*: Brongniart, *Bot. (Phan.) Voy. La Coquille* t. 60 B (? 1834).

*Vern.*: Milky Beauty-heads. *Distr.*: CDEJKNPW—also S.A., Tas., N.S.W.

—Leaves linear, broader in lower half; acute; stems erect; flower-heads yellow (scattered through lowland tracts of W., from N.W. Mallee to Glenelg R. and to Keilor Plains near Melbourne, also Goulburn Valley & Rutherglen district):

**C. citreus** Lessing, *Syn. Gen. Compos* 271 (1832).

*Illust.*: Brongniart, *Bot. (Phan.) Voy. La Coquille* t. 60 A (? 1834); Burbidge, *Flor. Aust. Cap. Terr.* fig. 389 (1970).

*Vern.*: Lemon Beauty-heads. *Distr.*: ACDHJMNPR—also S.A., Tas., N.S.W., A.C.T., Qd.

4. Lower leaves spreading, >15 mm. long; flower-heads yellow; involucre bracts with small, broad,  $\pm$  crenate petaloid laminæ (uncommon herb to 1 ft. high, scattered along flats of lower Murray Valley from Kerang to Mildura, also Dimboola & Avoca districts and Whipstick Scrub near Bendigo):

**C. sonderi** F. Muell. *Rep. Babbage Exped. S. Aust.* 13 (1859).

*Leucophyta citrea* Sond. in *Linnæa* 25: 490 (1853), non *Calocephalus citreus* Lessing (1832).

*Illust.*: McBarron, *Agric. Gaz. N.S.W.* 76: 423 (1965); Leigh & Mulham, *Pastoral Plants Riverine Plain* 116, col. (1965).

*Vern.*: Pale Beauty-heads (Yellow Poverty-Weed). *Distr.*: ACGJM—also S.A., N.S.W., Qd.

—Lower and upper leaves all appressed, <8 mm. long; flower-heads whitish; involucre bracts without differentiated petaloid laminæ,  $\pm$  united by the entangling copious dorsal wool (dense, rounded, white-tomentose shrub to 3 ft., abundant on many coastal dunes and sea-cliffs from mouth of Glenelg R. to Wingan Inlet):

**C. brownii** (Cass.) F. Muell. *Rep. Babbage Exped. S. Aust.* 13 (1859).

*Leucophyta brownii* Cass. in *Dict. Sci. nat.* 26: 159 (1823).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 286, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1230 (1957); Daley, *Vict. Nat.* 41: t. 6 opp. 208 (1925); Garnet, *Wildflowers Wilson's Prom.* t., n. 783 opp. 159 (1971).

*Vern.*: Cushion-bush. *Distr.*: EKNPTWZ—also W.A., S.A., Tas., N.S.W.

#### ACTINOBOLE Fenzl ex Endl. (1843)

**A. uliginosum** (A. Gray) Hj. Eichler in *Taxon* 12: 295 (1963).

*Gnaphalodes uliginosum* A. Gray in *Hook. J. Bot. & Kew Gdns Misc.* 4: 228 (1852).

*Illust.*: Cochran, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 127, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1232 (1957), as *Gnaphalodes uliginosum*; Garnet, *Vegetation Wyperfeld Nat. Park* fig. 14 n. 367 (1965), as *Gnaphalodes uliginosum*.

*Vern.*: Flannel Cudweed. *Distr.*: ABCDFGHJMR—also W.A., S.A., N.S.W., Qd, Cent. Aust.

### CRASPEDIA Forst. f. (1786)

1. Leaves usually 1-2 cm. broad,  $\pm$  oblanceolate; compound heads depressed-globular, very pale yellow to orange, 1.5-3.5 cm. diam.; involucre bracts brown or hyaline; pappus wholly white (throughout State, from N.W. Mallee to sea-coasts and alps, often prolific):

*C. glauca* (Labill.) Spreng. *Syst. Veg.* 3: 441 (1826).

*Richea glauca* Labill. *Voy. Rech. La Pérouse* 1: 186, t. 16 (1800);

*C. uniflora* sens. Ewart *Flor. Vict.* 1155 (1931), atque auctt. plur., non certe Forst. f. *Flor. Ins. Aust. Prodr.* 58 (1786).

*Illust.*: Labillardière (l.c.); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 14, col. (1962), as *C. uniflora*; Black, *Flor. S. Aust.* ed. 2: fig. 1234 (1957), as *C. uniflora*; Ewart, *Flor. Vict.* fig. 344 (1931), as *C. uniflora*; Sulman, *Wild Flowers N.S.W.* 2: t. 35 (1914), as *C. Richea*; Curtis's bot. Mag. 87: t. 5271, col. (1861), as *C. Richea*; Charsley, *Wild Flowers Melb.* t. 12 fig. 2, col. (1867), as *C. Richea*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 390 (1970); Everard, *Wild Flowers World* t. 140 fig. A, col. (1970), as *C. uniflora*; Morcombe, *Aust. Wildflowers* t. on [18], col. (1970).

*Vern.*: Common Billy-buttons. *Distr.*: ABCDEGHJKMNPRSTVWXZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[*C. uniflora* var. *alpina* (Backh. ex Hook. f., ut sp.) Ewart *Flor. Vict.* 1155 (1931) is smaller in stature, having stems and foliage densely covered with white-woolly hairs and the florets almost white; it occurs near or above the tree-line at Mts. Buffalo & Buller and on the Bogong High Plains, extending also to mountain plateaux in Tasmania where frequent.

*C. glauca* is sometimes treated as conspecific with the New Zealand genotype, *C. uniflora* Forst. f., but adequate comparisons of Australian and New Zealand materials have yet to be made. The former species appears to vary so much in leaf-shape and -vestiture, size and colour of flower-heads—four varieties are recognized in W. M. Curtis's *Student's Flor. Tasm.* 2: 347 (1963)—that a critical assessment of all mainland populations is desirable.]

—Leaves <1 cm. broad; compound heads either quite globular or ovoid to oblong (not depressed), bright golden-yellow; involucre bracts and pappus-bristles tipped with yellow 2

2. Plant annual; leaves oblanceolate, green, rather sparsely hirsute, 1-4 cm. long; compound heads solitary or several on a leafy peduncle, sometimes ovoid-oblong, subtended by a general involucre of small green, herbaceous,  $\pm$  lanceolate bracts; pappus-bristles 12 or less (Murray Mallee, from Swan Hill north-westerly to Mildura and Boundary Point):

**C. pleiocephala** F. Muell. in *Linnaea* 25: 404 (1853)—ut "*pleiocephala*".

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 124, col. (1965).

*Vern.*: Soft Billy-buttons. *Distr.*: AFG—also W.A., S.A., N.S.W., Qd.

—Plant usually *perennial*; leaves *linear*, *silvered* with a dense appressed cottony indumentum; compound heads always single, long-pedunculate, *regularly globoid*, firm, the *subtending bracts absent or minute and concealed*; pappus-bristles often >12 3

3. Leaves <2" long; stems <1 ft. tall; compound heads 8-12 mm. diam. (basalt plains between Melbourne & Lake Corangamite, otherwise scattered on flat open ground in Wimmera, Whipstick Scrub near Bendigo and Dookie district):

**C. chrysantha** (Schlechtendal) Benth. *Flor. aust.* 3: 580 (1867).

*Calocephalus chrysanthes* Schlechtendal in *Linnaea* 20: 592 (1847).

*Illust.*: Reeves in Willis, *Walkabout* 17<sup>o</sup>: 37 (Sept. 1951).

*Vern.*: Golden Billy-buttons. *Distr.*: CKMNPR—also S.A., N.S.W., Qd.

—Leaves 2-10" long, ribbon-like; stems >1 ft. (and up to 3 ft.) tall; compound heads 15-25 mm. diam. (localized on heavier dark soils prone to inundation in Goulburn Valley, also Casterton & Longerenong districts):

**C. globosa** (Bauer ex Benth.) Benth. *Flor. aust.* 3: 580 (1867).

*Pycnosorus globosus* Bauer ex Benth. in Endl. et al. *Enum. Plant. Hueg.* 63 (1837).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 124, col. (1965), as *C. uniflora*.

*Vern.*: Drumsticks. *Distr.*: CDM—also S.A., N.S.W., Qd.

#### CHTHONOCEPHALUS Steetz (1845)

**C. pseudevax** Steetz in Lehm. *Plant. Preiss.* 1: 444 (1845).

*Illust.*: Crosbie Morrison in *Wild Life (Melb.)* 3: 446 (1941), as *Chthonocephalus*.

*Vern.*: Groundheads. *Distr.*: AB (Mallee)—also W.A., S.A., N.S.W., Cent. Aust.

#### Tribe HELIANTHÆ

##### \*IVA L. (1753)

\***I. axillaris** Pursh *Flor. Amer. sept.* 2: 743 (1814).

*Illust.*: L. H. B. in Parsons, *J. Dep. Agric. Vict.* 60: 495 (1962); Reinholdt in Mason, *Flor. Marshes Calif.* fig. 357 (1957); Abrams, *Ill. Flor. Pacific States* 4: fig. 5207 (1960); Jepson, *Manual flowering Plants Calif.* 1105 (1925); Muenscher, *Weeds* 504 (1935); Georgia, *Manual Weeds* fig. 316 (1914); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 339 (1913).

*Vern.*: Poverty Weed (Death Weed). *Distr.*: GN (Kerang & Newstead)—also S.A.

## \*AMBROSIA L. (1753)

1. Stems and foliage minutely *glandular-tuberculate*, shortly but coarsely hirsute; leaves *green, lanceolate* in outline, *pinnatifid* with irregularly toothed segments 2-4 mm. wide; male inflorescences not exceeding 2", the corolla-tubes *not projecting* above each bell-like involucre; female involucre 1.5-2.5 mm. wide, *evenly ovoid-conic* (troublesome perennial weed 1 ft. high or more, with creeping rootstock, scattered through Mallee, Goulburn Valley and Corryong districts):

\**A. psilostachya* DC. *Prodr.* 5: 526 (1836).

*A. artemisiifolia* sens. Ewart *Flor. Vict.* 1158 (1931), *non* L. (1753).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 30, *col.* (1958); Carn, *Control of Weeds* (N.S.W.) t. opp. 38, *col.* (1939); Carn in Eardley, *J. Dep. Agric. S. Aust.* 47: 431 (1944); Abrams, *Ill. Flor. Pacific States* 4: fig. 5218 (1960); Georgia, *Manual Weeds* fig. 319 (1914); Britton & Brown, *Ill. Flor. N. States & Canada* ed. 2, 3: 342 (1913).

*Vern.*: Perennial Ragweed. *Distr.*: BGMV—also S.A., N.S.W.

—Stems and foliage *not tuberculate*, hoary from small appressed hairs; leaves *greyish, deltoid* in outline, *bipinnatisect* into linear segments 1 mm. wide or less; male inflorescence forming a slender raceme of heads 3-4" long, the corolla-tubes *manifestly exerted* from involucre; female involucre  $\pm$  1 mm. wide,  $\pm$  *truncate* but with a central boss around the styles (annual or perennial restricted to Coode Id & Sth. Kensington in urban region of Melbourne):

\**A. tenuifolia* Spreng. *Syst. Veg.* 3: 851 (1826).

*Illust.*: Arechavaleta, *Flor. Urug.* 3: 305 t. 60 (1908); Martius, *Flor. brasil.* 6<sup>3</sup>: t. 49 (1884).

*Vern.*: Lacy Ambrosia. *Distr.*: N—also N.S.W.

## \*XANTHIUM L. (1753)

1. Stems bearing a *yellowish 3-pronged slender spine* (1-2 cm. long) below each leaf; leaf-blade <1" wide, *much longer than broad*, shortly petiolate, green above but finely *whitish-tomentose beneath*; fruiting head 10-12 mm. long, covered with *slender very strongly hooked spines*, the 2 apical beaks inconspicuous (annual weed widespread throughout W. districts, also E. Gippsland):

\**X. spinosum* L. *Spec. Plant.* 2: 987 (1753).

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 142 *col.*, 144 (1965); Leigh & Mulham, *Pastoral Plants Riverine Plain* 143 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1168 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 113 (1958); Chippendale, *Poison Plants N. Terr.* Ext. Art. n. 2 pt. III: t. 33 (1960); Marloth, *Flor. S. Afr.* 3<sup>3</sup>: t. 59 fig. D, *col.* (1932); Burridge, *Flor. Aust. Cap. Terr.* fig. 366 (1970).

*Vern.*: Bathurst Burr (Common Cocklebur). *Distr.*: ACGHJKLMNPRW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Stems *without any spines*; leaf-blade  $>1''$  wide (usually 2-4''), about as long as broad, long-petiolate, green and sparingly pubescent on both sides; fruiting head with *stout moderately hooked spines*, the 2 apical beaks *conspicuous*. 2

2. Fruiting head pale brown,  $\pm$  cylindrical, 15-20 mm. long, the 2 large apical beaks distally *incurved and hooked*, the very stout lateral spines 3-5 mm. long (Mallee and Wimmera to Pyramid Hill):

\**X. orientale* L. *Spec. Plant.* ed. 2, 2: 1400 (1763).

*X. californicum* Greene in *Pittonia* 4: 62 (1899).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1169 (1957), as *X. californicum*; Green, *Agric. Gaz. N.S.W.* 65: 259 (1954), as *X. californicum*; O'Neil, *J. Dep. Agric. S. Aust.* 62: 9 (1958), as *X. californicum*; Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: 502 fig. 254 e (1915)—fruit; Widder in Fedde, *Repert. Spec. nov. Regn. veg. Beih.* 20: t. 2 (1923)—fruit.

*Vern.*: Californian Burr (European Cockleburr). *Distr.*: ABCFGHLM—also S.A., N.S.W.

—Fruiting head usually dark brown, *ovoid*, 10-16 mm. long, the 2 apical beaks *almost straight* and lateral spines  $\pm$  2 mm. long (upper Murray Valley, from Echuca to Corryong, also Dookie & Mildura districts):

\**X. pungens* Wallr. *Beitr. Bot.* 1: 236 (1842).

*X. strumarium* sens. Ewart *Flor. Vict.* 1158 (1931), *non* L. (1753).

*Illust.*: Meadly, *Weeds W. Aust.* 146 col., 147 (1965); Leigh & Mulham, *Pastoral Plants Riverine Plain* 142 (1965), as *X. chinense*; Black, *Flor. S. Aust.* ed. 2: fig. 1170 (1957); Chippendale, *Poison Plants N. Terr.* Ext. Art. n. 2 pt. III: t. 32 (1960); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 40 col., also fig. 112 (1958), as *X. chinense*; Abrams, *Ill. Flor. Pacific States* 4: fig. 5228 (1960), as *X. strumarium*.

*Vern.*: Noogoora Burr (Cockleburr). *Distr.*: AMRV—S.A., N.S.W., Qd, N. Terr.

[In J. N. Whittet's *Weeds* (N.S.W. Dep. Agric.) 256 (1958) the name *X. chinense* is accepted for the Noogoora Burr. Also, when discussing *Xanthium* in *Vict. Nat.* 74: 70 (1957), P. F. Morris synonymised *X. pungens* under *X. chinense* Mill. *Gdnrs Dict.* ed. 8: n. 4 (1768). It is here preferred to use the former name, as was done in J. M. Black's *Flor. S. Aust.* ed. 2: 874 (1957), until it can be proved beyond doubt that the two descriptions apply to one and the same species; there is no uncertainty about the correct application of the name *X. pungens* to introduced populations of Noogoora Burr in eastern Australia.]

SIGESBECKIA L. (1753)—*etymol. orig.*

*S. orientalis* L. *Spec. Plant.* 2: 900 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1148 o, 1171 (1957); Sulman, *Wild Flowers N.S.W.* 2: t. 42 (1914); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 144 (1906); Gagnepain in Lecomte, *Flor. gén. Indo-Chine* 3: 597 (1924); Basu, *Ind. med. Plants* t. 529 (1918); Wight, *Icon. Plant. Ind. orient.* 3: t. 1103 (1846)—all as *Siegesbeckia*.

*Vern.*: Indian Weed. *Distr.*: CDEJKNPRSTVWZ—also S.A., N.S.W., Qd, Cent. Aust., N.Z.

[In their *Flor. Aust. Cap. Terr.* 366, 368 (1970), Burbidge & Gray assign the non-coastal populations to a distinct species, *S. microcephala* DC. *Prodr.* 5: 496 (1836), differing from *S. orientalis* in its *shorter* involucre bracts, the outer ones of which are *devoid* of conspicuous gland-tipped hairs.]

## ECLIPTA L. (1771)

*E. platyglossa* F. Muell. *Fragm. Phyt. Aust.* 2: 135 (1861).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1172 (1957); Mueller, *Key Syst. Vict. Plants* 2: fig. 87 (1886); Schönfeld in Mueller, *Plants indig. Colon. Vict.* t. 39 (1864–1865).

*Vern.*: Yellow Twin-heads. *Distr.*: ACFGLMNT—also W.A., S.A., N.S.W., Qd, N. Terr.

## \*WEDELIA Jacq. (1760)

\**W. glauca* (Ortega) S. F. Blake in *Contr. Gray Herb. Harv. new ser.* 52: 39 (1917).

*Pascalina glauca* Ortega *Nov. Plant. Matrit.* 39, t. 4 (1797).

*Illust.*: Ortega (l.c.); Arechavaleta, *Flor. Urug.* 3: 321 t. 66 (1908), as *Pascalina glauca*; Small, *Manual Southeastern Flor.* 1430 (1933)—flower, as *P. glauca*; Holden in Paxton's *Mag. Bot.* 8: t. 125, col. (1841), as *P. glauca*.

*Vern.*: *Pascalina*. *Distr.*: NP (Melbourne, Geelong & Bannockburn)—also S.A.

## \*VERBESINA L. (1753)

\**V. encelioides* (Cav.) A. Gray in Brewer et al. *Bot. Calif.* 1: 350 (1876).

*Ximenesia encelioides* Cav. *Icon. & Descr. Plant.* 2: 60, t. 178 (1793).

*Illust.*: Cavanilles (l.c.); Everist, *Common Weeds Farm & Pasture* fig. 103 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 35, col. (1958); Macadam, *Agric. Gaz. N.S.W.* 77: 74 (1966); White, *Qd agric. J. new ser.* 23: 521 (1925); Clements in *Natn. geogr. Mag.* 51: t. 25 fig. 5, col. (May 1927); Abrams, *Ill. Flor. Pacific States* 4: fig. 5181 (1960).

*Vern.*: Crownbeard (Goldweed). *Distr.*: AG (Mallee)—also N.S.W., Qd.

## GLOSSOGYNE Cass. (1827)

*G. tenuifolia* (Labill.) Cass. in *Dict. Sci. nat.* 51: 475 (1827).

*Bidens tenuifolia* Labill. *Sert. Aust.-Caledon.* 44, t. 45 (1825).

*Illust.*: Labillardière (l.c.); Black, *Flor. S. Aust.* ed. 2: fig. 1174 (1957); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 149 (1906); van Steenis, *Bull. Jard. bot. Buitenzorg* ser. 3, 12: 169 (1932).

*Vern.*: Glossogyne. *Distr.*: V—also W.A., S.A., N.S.W., Qd, N. Terr., Cent. Aust.

## BIDENS L. (1753)

*B. tripartita* L. *Spec. Plant.* 2: 831 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 15: t. 26 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1223 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 262- a-e (1915).

*Vern.*: Trifid or Erect Burr-marigold. *Distr.*: TW—also N.S.W., Qd, N.Z.

[The South American *B. subalternus* DC. appeared at Yarrowonga in March 1970, but it is not yet known whether this annual weed has become firmly established there. From *B. tripartita* it may readily be distinguished by the more numerous leaflets (> 5 per leaf), subequal non-foliaceous phyllaries and blackish narrow-linear achenes with 4 (rarely only 2-3) awns that are  $< \frac{1}{4}$  the length of achene.]

\*GALINSOGA Ruiz & Pav. (1794)

\**G. parviflora* Cav. *Icon. & Descr. Plant.* 3: 41, t. 281 (1794).

*Illust.*: Cavanilles (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1175 (1957); Ross-Craig, *Drawings Brit. Plants* 15: t. 27 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1224 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5201 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 265 h-n (1915); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 150 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 367 (1970).

*Vern.*: Galinsoga (Gallant Soldier, Potato Weed). *Distr.*: ANPSWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

\*MADIA Molina (1782)

\**M. sativa* Molina *Sagg. Stor. nat. Chile* 136 (1782).

*Illust.*: Wauer in Ewart, *Weeds . . . Vict.* t. opp. 40, col. (1909); Abrams, *Ill. Flor. Pacific States* 4: fig. 5265 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 270 a-l (1915).

*Vern.*: Pitch Weed. *Distr.*: NPV—also N.S.W., N.Z.

[Also in the tribe *Heliantheæ* are two representatives of the genus *Helianthus* which have appeared occasionally in Victoria but are hardly yet naturalized: *H. annuus* L. (Common Sunflower) and *H. tuberosus* L. (Jerusalem Artichoke) are both North American large-leaved herbs, with stout annual flowering stems to 8 ft. tall and showy yellow heads 2" wide or more; these may persist from year to year in or near gardens. The former is an annual without tubers, its leaves being green on both sides and the phyllaries ovate to ovate-lanceolate; the latter perennates by fleshy edible tubers, has leaves whitish-pubescent on the under surfaces and phyllaries that are linear-lanceolate. *H. annuus* is recorded as naturalized along roadsides and waste places in the Renmark irrigation district, S.A., so it may be expected to extend into far N.W. Victoria.]

Tribe HELENIÆ

\*TAGETES L. (1753)

\**T. minuta* L. *Spec. Plant.* 2: 887 (1753).

*Illust.*: Everist, *Common Weeds Farm & Pasture* fig. 85 (1957); Lansdell in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 137 (1940); Lansdell, *J. Dep. Agric. S. Afr.* 3: 369 (1921), also *ibid.* 8: 384-86 (1924); *Rhodesia agric. J.* 15<sup>1</sup>: 152 (1918) and 16<sup>4</sup>: 314 (1919); Arechavaleta, *Flor. Urug.* 3 (An. Mus. Nac. Montevideo 6): t. 79 (1908).

*Vern.*: Stinking Roger. *Distr.*: MSTWX—also N.S.W.

## \*SCHKÜHRIA Roth (1797)

\**S. pinnata* (Lam.) Cabrera in *An. Soc. cient. Argent.* 114: 189 (1932).

*Pectis pinnata* Lam. in *J. Hist. nat.* 2: 150, t. 31 (1792).

*Illust.*: Cabrera, *Revta Mus. La Plata nueva ser.* 4 (Bot.): 245 fig. 73 (1941); Hoffmann in Engler & Prantl, *Natürl. Pflfam.* IV 5: 256 fig. 124 c & d (1890)—florets, as *S. abrotanoides*.

*Vern.*: Schkuhria. *Distr.*: GM.

[Victorian plants are referable to the var. *abrotanoides* (Roth, *ut sp.*) Cabrera *l.c.*, *S. abrotanoides* Roth being the genotype. This differs from the typical form of *S. pinnata* (in which all 8 pappus-scales are muticous) in having 4-5 of the pappus-scales *aristate* at their tips. Cabrera (*l.c.*) had ascribed authorship of the binomial *S. pinnata* to O. Kuntze (1898); but, as Kuntze merely mentioned this name in synonymy, it was not validly published at that time.

Another member of the tribe *Heleniæ*, that sometimes persists where garden refuse has been dumped, is *Gaillardia aristata* Pursh of the western plains in U.S.A. This rhizomic perennial has rather spatulate, hairy, often pinnatifid leaves and showy red- or yellow-rayed heads (3-4" wide) on slender peduncles. The flowering period is long, and several cultivars are popularly grown—bicolourous and double forms.]

## Tribe ANTHEMIDÆÆ

## \*ANTHEMIS L. (1753)

1. Plant *fætid* if bruised, *glabrous* or with sparsely hairy *erect stems* (1 ft. high or more); receptacle of head *long-conical*, with *linear-subulate scales*; ray-florets *neuter*, without styles; achenes 1.5-2 mm. long, with 10 *tuberculate* vertical ribs (occasional annual of *S.* Gippsland, also N.E. hills from Tolmie to Corryong):

\**A. cotula* L. *Spec. Plant.* 2: 894 (1753).

*Illust.*: Wauer in Ewart, *Weeds . . . Vict.* t. opp. 32, col. (1909); Bell & Boyer, *N.Z. J. Agric.* 108: 159 (1964); M. E. R. in Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: fig. 63 c (1940); Ross-Craig, *Drawings Brit. Plants* 16: t. 4 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1273 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5667 (1960).

*Vern.*: Stinking Mayweed. *Distr.*: RTV—also S.A., Tas., N.S.W., Qd, N.Z.

—Plant *not fætid*,  $\pm$  *hairy* all over, with *ascending or decumbent stems*; receptacle conical, with *lanceolate to oblong scales*; ray-florets *female*, with styles; achenes *never tuberculate*

2. Ultimate segments of leaves *flattened, acuminate*; scales between the florets *pointed*; achenes 2-3 mm. long, *truncate* at top, *ribbed all round* (almost *odourless annual*, in Dandenong Ranges etc.):

\**A. arvensis* L. *Spec. Plant.* 2: 894 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 16: t. 5 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1274 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5668 (1960); Muenscher, *Weeds* 481 (1935); Poinset in Bonnier, *Flor. compl. Franc.*,



*Suisse & Belg.* 5: fig. 1465, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 263 fig. 4, col. (1915).

*Vern.*: Field or Corn Chamomile. *Distr.*: N—also Tas., N.Z.

—Ultimate segments of leaves  $\pm$  *subulate, shortly acute*; scales between the florets broad, *obtus*e; achenes 1-1.5 mm. long, *rounded* at top, *smooth* except for 3 striations on inner face (strongly and pleasantly *aromatic perennial* with creeping stock, scattered on moist flats of W., from Colac to Daylesford, also Foster district & E. Gippsland at Bendoc):

\**A. nobilis* L. *Spec. Plant.* 2: 894 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1176 (1957); Davey, *J. Dep. Agric. Vict.* 21: 440 (1923); Ross-Craig, *Drawings Brit. Plants* 16: t. 6 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1275 (1961); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1467, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 272 a-g (1915); Pammel, *Manual poison. Plants* fig. 788 (1911); Coste, *Flor. Franc.* 2: fig. 1950 (1903).

*Vern.*: Common Chamomile. *Distr.*: JKNTZ—also S.A., Tas.

[Some recent writers prefer to recognize *A. nobilis* as distinct at the generic level, by virtue of a *saccate base* to the tube in disk-florets and achenes that are *laterally compressed*. If this view be adopted, then the correct name for Chamomile would be *Chamæmelum nobile* (L.) All. *Flor. Pedem.* 1: 185 (1785).]

### \*ACHILLEA L. (1753)

\**A. millefolium* L. *Spec. Plant.* 2: 899 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1177 (1957); Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 58 (1940); Ross-Craig, *Drawings Brit. Plants* 16: t. 1 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1276 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5671 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 264 fig. 2, col. (1927); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1483, col. (1922); Burbidge, *Flor. Aust. Cap. Terr.* fig. 370 (1970).

*Vern.*: Milfoil (Yarrow). *Distr.*: EJKMNPRSTVWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

### \*CHRYSANTHEMUM L. (1753)

1. Leaves *pinnate*, with pinnatifid leaflets; heads in *corymbs*; ray-florets <10 mm. long 3  
Leaves *simple*, toothed to pinnatifid; heads *solitary*, large, long-pedunculate; ray-florets white, 15-25 mm. long 2
2. Plant 1-2 ft. high; leaves <1" wide, only the uppermost stem-clasping, those at base long-petiolate; achenes of ray-florets 2-3 mm. long, *without auricles* (scattered through E. highlands where sometimes locally plentiful in open pastoral country, also at Mt. Macedon & Torquay):

\**C. leucanthemum* L. *Spec. Plant.* 2: 888 (1753).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 107-108 (1958); Allan, *Bull. Dep. sci. industr. Res.*, N.Z. 83: fig. 60, 63 E (1940); Ross-Craig, *Drawings Brit. Plants* 16: t. 8 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1283 (1961); Adams, *Ill. Flor. Pacific States* 4: fig. 5675 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: t. 265 fig. 1, col. (1927).

*Vern.*: Ox-eye Daisy. *Distr.*: NPSTWZ—also W.A., S.A., Tas., N.S.W., N.Z.

—Plant 3-6 ft. high; larger leaves >1" wide, the majority sessile and stem-clasping; achenes of ray-florets >3 mm. long, with 2-3 minute auricles at summit (escaping occasionally from cultivation and favouring damp places, e.g. Dunolly and near Chalet at Mt. Buffalo):

\**C. lacustre* Brot. *Flor. lusit.* 1: 379 (1804).

*Illust.*: Bailey, *Standard Cycl. Hort.* 1: fig. 935 (1935); *Gdnrs' Chron.* ser. 3, 5: 589 (1889).

*Vern.*: Portuguese Swamp Daisy. *Distr.*: HR (sporadic).

[The widely grown Shasta Daisy, *C. maximum* Ramond, is intermediate in character between *C. lacustre* and *C. leucanthemum*, and is presumed to be of hybrid origin.]

3. Leaves <4" long, with 3-5 pairs of leaflets; stems sparsely pubescent; corymbs lax, of relatively few long-stalked heads; ray-florets with broad white ligules to 8 mm. long (occasional garden escape in Melbourne suburbs, Camperdown and near Mt. Buffalo Chalet):

\**C. parthenium* (L.) Bernh. *Syst. Verz. Pflanz. Erfurt* 145 (1800).

*Matricaria parthenium* L. *Spec. Plant.* 2: 890 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 16: t. 9 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1284 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5678 (1960); Bailey, *Standard Cycl. Hort.* 1: fig. 930 (1935); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 330 & 331 (1927).

*Vern.*: Feverfew (Exhibition Border). *Distr.*: KNR (sporadic)—also Tas., N.Z.

—Leaves 6-10" long, with  $\pm$  12 pairs of deeply dissected leaflets; stems glabrous; corymbs dense, of numerous crowded shortly stalked heads; ray-florets with yellow, minute and quite inconspicuous ligules or none at all (garden escape, scattered in cooler districts, e.g. Warrnambool, Gisborne, Bright, Korumburra):

\**C. vulgare* (L.) Bernh. *Syst. Verz. Pflanz. Erfurt* 144 (1800).

*Tanacetum vulgare* L. *Spec. Plant.* 2: 844 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 16: t. 13 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1285 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5682 (1960); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 5: fig. 1450, col. (1922); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: t. 263 fig. 5, col. (1915); Burbidge, *Flor. Aust. Cap. Terr.* fig. 369 (1970)—all as *Tanacetum vulgare*.

*Vern.*: Tansy. *Distr.*: ENPRT (sporadic)—also S.A., Tas., N.S.W., A.C.T., N.Z.

[In Ewart's *Flor. Vict.* 1165 (1931), *C. segetum* L. (the Corn Marigold of Europe) is recorded as "widely spread in Victoria". The only voucher specimen at Melbourne Herbarium is an old one collected near Brighton in 1884, but there is a more recent report of a casual occurrence at Graytown. Since this species is not now regarded as naturalized or spontaneous anywhere in the State, it has been dropped from the present handbook. *C. segetum* is a glabrous,  $\pm$  glaucous annual about 1 ft. high, with sessile, irregularly toothed or lobed leaves, large solitary flower-heads (1-2" diam.) in which the conspicuous ray of marginal florets is golden-yellow and the ribbed achenes of two kinds (wingless in disk-florets but narrowly 2-winged in ray-florets); it is depicted in colour by Everard, *Wild Flowers World* t. 39 fig. B (1970).]

### \*MATRICARIA L. (1753)

Stem-leaves 2-4 cm. long, *glabrous* or nearly so; central green portion of phyllaries  $\pm$  1 mm. wide, the scarious hyaline margins very wide; receptacle *conical*, hollow (scattered weed in Creswick, Geelong & Cornishtown districts, also Wilson Prom.):

\**M. matricarioides* (Lessing) Porter in *Mem. Torrey bot. Cl.* 5: 341 (1894).

*Artemisia matricarioides* Lessing in *Linnaea* 6: 210 (1831);

*M. discoidea* DC. *Prodr.* 6: 50 (1838);

*Santolina suaveolens* Pursh *Flor. Amer. sept.* 2: 520 (1814), *non*

*M. suaveolens* L. (1755).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 16: t. 12 (1961); Butcher, *New ill. Brit.*

*Flor.* 2: fig. 1281 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5687 (1960);

Hegi, *Ill. Flor. Mittel-Eur.* 6: fig. 301 a-f, 302 (1927), as *M. discoidea*.

*Vern.*: Rounded or Rayless Chamomile (Pineapple Weed—U.S.A.). *Distr.*: JPRT—also Tas., N.S.W., N.Z.

Stem-leaves <2 cm. long, *sparsely hairy*; central green portion of phyllaries <0.5 mm. wide; receptacle *globular* (Coode Id at mouth of Yarra R.):

\**M. globifera* (Thunb.) Harvey in Harvey & Sonder *Flor. capensis* 3: 165 (1865).

*Cotula globifera* Thunb. *Prodr. Plant. Capens.* 162 (1800).

*Vern.*: Globe Chamomile. *Distr.*: N.

[*M. inodora* L. (Scentless Mayflower), now treated as a subspecies of *M. maritima* L., was also collected at Coode Id in Oct. 1908, but has not persisted there. This taxon differs strikingly from the two above, naturalized species in having a conspicuous ray of white ligulate florets; thereby it much resembles the Common Chamomile, but may be distinguished by its odorless foliage and the absence of receptacular scales.]

### CERATOGYNE Turcz. (1851)

*C. obionoides* Turcz. in *Bull. Soc. Nat. Moscou* 24: 69 (1851).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1179 (1957); Hooker in Hoffmann, Engler & Prantl, *Natürl. Pflfam.* IV 5: fig. 129 t & u (1892)—floret.

*Vern.*: Wingwort. *Distr.*: AB (Mallee)—also W.A., S.A., N.S.W., Qd.

## COTULA L. (1753)

1. Leaves regularly *pinnate* or *bipinnate*, their bases *not completely sheathing the stems*, often in basal rosettes or in clusters at the nodes; outer achenes narrowly winged, wingless or with thickened margins 3  
 Leaves glabrous, entire or  $\pm$  pinnatifid with a few irregular teeth or lobes, their bases *completely stem-sheathing*; achenes of outer female florets *broadly winged* 2
2. Leaves *entire*, *narrow-linear to filiform*, up to 1 mm. wide; involucre bracts *very few* and broad, almost *orbicular*; florets pale yellow (*annuals*, sometimes slightly hairy on the leaf-sheaths and long slender peduncles, scattered on damp saline ground of W. & S.W., also salt-marshes of Western Port):

*C. vulgaris* M. R. Levyns in *J. S. Afr. Bot.* 7<sup>3</sup>: 133 (1941)

var. *australasica* J. H. Willis in *Vict. Nat.* 73: 201 (1957).

*C. filifolia* sens. Ewart *Flor. Vict.* 1167 (1931), atque auctt. Aust. plur., non Thunb. (1800).

*Vern.*: Slender Cotula. *Distr.*: CEJKNP—also W.A., S.A., Tas.

[The Australian variety differs from var. *vulgaris* (South African) in its more or less hairy peduncles and smaller corollas (1 mm. long—*cf.* 1.5-1.7 mm. in var. *vulgaris*).]

—Leaves normally *pinnatifid*, rarely entire and then oblong; involucre bracts *oblong*,  $>8$ ; florets bright yellow, odorous (entirely *glabrous perennials*, often  $\pm$  succulent, the old stems rooting in mud or water; abundant in wet places throughout lowlands):

*C. coronopifolia* L. *Spec. Plant.* 2: 892 (1753).

*C. integrifolia* Hook. f. *Flor. Tasm.* 1: 192, t. 50 B, col. (1856).

*Illust.*: Fitch in Hooker f. (*l.c.*); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 252, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1181 (1957); Pomeroy in Mason, *Flor. Marshes Calif.* fig. 353 (1957); Abrams, *Ill. Flor. Pacific States* 4: fig. 5691 (1960); Salmon, *N.Z. Flowers & Plants in Colour* revised ed.: t. 28, col. (1967); Sulman, *Wild Flowers N.S.W.* 2: t. 37 (1914); Garnet, *Wildflowers Wilson's Prom.* t., n. 790 opp. 126 (1971).

*Vern.*: Water-buttons. *Distr.*: ACDEGHJKMNPRTVWXZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

[*C. integrifolia* Hook. f. is based upon a reduced state of this species. First-year seedlings and crowded plants on drier terrain are often quite diminutive, with much less divided foliage.]

3. Plants *glabrous* or slightly hairy (in *C. reptans*) 5  
 Plants conspicuously *hairy*; pinnæ broad, usually lobed or pinnatifid 4
4. Peduncles *very slender*, much exceeding the leaves; heads small (to 6 mm. wide); female florets numerous, in several rows, *without any corollas* (widespread *annual*, often a weed in gardens):

*C. australis* (Sieber ex Spreng.) Hook. f. *Flor. N.-Z.* 1: 128 (1853).

*Anacyclus australis* Sieber ex Spreng. *Syst. Veg.* 3: 497 (1826).

*Illust.*: Fitch in Hooker f., *Flor. Tasm. 1*: t. 50 A, col. (1856); Ewart, *Flor. Vict.* fig. 346 (1931); Abrams, *Ill. Flor. Pacific States 4*: fig. 5692 (1960); Jepson, *Manual flowering Plants Calif.* 1143 (1925).

*Vern.*: Common Cotula. *Distr.*: ABCDEFGHJKMNPRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Peduncles rather *stout*, not or hardly exceeding the leaves; heads usually > 6 mm. wide; female florets *with corollas* (prostrate alpine or sub-alpine *perennial*, widespread and frequent from Lake Mtn. to the borders of N.S.W.):

**C. filicula** (Hook. f.) Benth. *Flor. aust. 3*: 551 (1867).

*Symphyomera filicula* Hook. f. in Hook. *Lond. J. Bot. 6*: 116 (1847).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 540, col. (1968); Fitch in Hooker f., *Flor. Tasm. 1*: t. 51 B, col. (1856), as *Leptinella filicula*; Hooker in Hoffmann, Engler & Prantl, *Natürl. PflFam. IV 5*: fig. 62 B (1889)—floret; Burbidge, *Flor. Aust. Cap. Terr.* fig. 371 (1970),

*Vern.*: Mountain Cotula. *Distr.*: NRSVWZ—also Tas., N.S.W., A.C.T.

5. Pinnæ normally *bipinnate* (or else few, linear and distant); peduncles ± *slender, not hollowed*; heads pale creamy-yellow 6

Pinnæ numerous, *close*, lanceolate, *usually entire*; peduncle short, *stout, hollow* as in dandelion (prostrate alpine perennial, scattered in damp situations from the Baw Baws to the Cobberas):

**C. alpina** (Hook. f.) Hook. f. *Flor. Tasm. 1*: 192, t. 51 A, col. (1856).

*Ctenosperma alpinum* Hook. f. in Hook. *Lond. J. Bot. 6*: 115 (1847).

*Illust.*: Fitch in Hooker f. (l.c.).

*Vern.*: Alpine Cotula. *Distr.*: SVW—also Tas., N.S.W., A.C.T., ? Qd.

6. Leaf-segments *acute*, usually again dissected; bracts of head *numerous, oblong*; female florets very few (usually < 6), in a single row (*upright annual*, widespread on temporarily damp flats of W., N.W. & Goulburn Valley):

**\*C. bipinnata** Thunb. *Prodr. Plant. capens.* 162 (1800).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 123, col. (1965).

*Vern.*: Ferny Cotula. *Distr.*: ACHJM—also W.A., S.A., N.S.W.

—Leaf-segments *obtus*e, very variable in size and dissection; bracts *few, almost orbicular* (*creeping perennial*, widespread in S. districts and usually in damp brackish places near the coast):

**C. reptans** (Benth.) Benth. *Flor. aust. 3*: 551 (1867).

*Strongylospermum reptans* Benth. in Endl. et al. *Enum. Plant. Hueg.* 60 (1837).

*Illust.*: Fitch in Hooker f., *Flor. Tasm. 1*: t. 52 B, col. (1856), as *Leptinella intricata*; Hooker in Hoffmann, Engler & Prantl, *Natürl. PflFam. IV 5*: fig. 62 F (1889)—floret.

*Vern.*: Creeping Cotula. *Distr.*: DEJKNPTWXZ—also S.A., Tas., N.S.W., Qd.

[The var. *major* Benth. *Flor. aust.* 3: 551 (1867) is coarser than the typical form, almost wholly *glabrous*, with longer petioles & peduncles and larger, rounded, blunt, semisucculent leaf-segments. This variant occurs at Wilson Prom. but is more frequent in saline swamps of Tasmania. In W. M. Curtis's *Student's Flor. Tasm.* 2: 357 (1963) it has been treated as a distinct species, *C. longipes* (Hook. f., ut *Leptinella* sp.) W. M. Curtis *l.c.* 463 (1963), and it is figured in colour by Fitch in Hook. f. *Flor. Tasm.* 1: t. 52 A (1856).]

\**SOLIVA* Ruiz & Pav. (1794)

\**S. pterosperma* (Juss.) Lessing *Syn. Gen. Compos.* 268 (1832).

*Gymnostyles pterosperma* Juss. in *Ann. Mus. Paris* 4: 262 (1804);

*S. sessilis* sens. Ewart *Flor. Vict.* 1170 (1931), atque J. M. Black *Flor. S. Aust.* ed. 2: 881 (1957), *non strict.* Ruiz & Pav. (1794).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 42, *col.* (1958); Baker in White, *Qd agric. J.* new ser. 18: 398 t. 93 (1922), as *S. sessilis*; Burbridge, *Flor. Aust. Cap. Terr.* fig. 373 (1970).

*Vern.*: Jo Jo. *Distr.*: BCDEMN PSTWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

CENTIPEDA Lour. (1790)

1. Plant *annual, weak, procumbent*, often somewhat cottony; leaves 0.5-1.5 mm. long, spatulate to cuneate,  $\pm$  petiolate, entire or with a few blunt teeth or lobes; flower-heads subsessile or *shortly pedunculate*, biconvex, 3-4 mm. diam.; female florets in 2-3 rows; achenes  $\pm$  1 mm. long, with furrows extending to summit (on damp flats almost throughout State):

*C. minima* (L.) A. Br. & Aschers. *Ind. Sem. Hort. Berol.* App. 6 (1867).

*Artemisia minima* L. *Spec. Plant.* 2: 849 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1182 A (1957)—achene; Hope in Bailey & Gordon, *Plants poison. & injur. to Stock* t. opp. 37 (1887), as *C. orbicularis*; Bailey, *Weeds & susp. poison. Plants Qd* fig. 153-55 (1906), as *C. orbicularis*; Makino, *Ill. Flor. Jap.* [98] (1924).

*Vern.*: Spreading Sneezeweed. *Distr.*: ACDEFGJMRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust.

—Plant *perennial, erect or ascending*, at length quite glabrous; leaves 1-3 cm. long, oblong, *coarsely toothed*, the bases broad and stem-clasping; flower-heads quite *sessile* 2

2. Heads *globular to biconvex*; involucre  $\pm$  1 mm. long, flattish, *much shorter* than the green florets; female florets in 6-8 rows, disk-florets 10-25; achenes 1.5-2.5 mm. long, with furrows not reaching to the rounded summit (very widespread on damp flats, but absent from alps and higher montane tracts):

*C. cunninghamii* (DC.) A. Br. & Aschers. *Ind. Sem. Hort. Berol.* App. 6 (1867).

*Myriogyne cunninghamii* DC. *Prodr.* 6: 139 (1838).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 121, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1182 b (1957)—achene; Mueller, *Key Syst. Vict. Plants* 2: fig. 88 (1886); Mueller, *Plants indig. Colon. Vict.* t. 41 (1864-65), as *Myriogyne cunninghamii*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 372 (1970).  
*Vern.*: Common Sneezeweed. *Distr.*: ABCDEFGHJLMNPQRSTVW—also S.A., N.S.W., A.C.T., Qd, Cent. Aust.

—Heads stiffly erect, at first *barrel-shaped* then cup-shaped to broadly obconic with *flattened top*; involucre 3-5 mm. long, not shorter than the whitish florets; female florets in  $\pm 3$  rows, disk-florets  $\pm 10$ ; achenes 2-5-3 mm. long, the furrows scarcely extending above middle (restricted to far N.W. Mallee, at Mildura etc.):

**C. thespidioides** F. Muell. *Fragm. Phyt. Aust.* 8: 143 (1874).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1182 c (1957)—achene.  
*Vern.*: Desert Sneezeweed. *Distr.*: A—also S.A., N.S.W., Qd.

#### ABROTANELLA Cass. (1825)

**A. nivigena** (F. Muell.) F. Muell. *Plants indig. Colon. Vict.* (Lithogr.): sub t. 40 (1865).

*Trineuron nivigenum* F. Muell. in *Trans. phil. Soc. Vict.* 1: 105 (1855).

*Illust.*: Schönfeld in F. Muell., *Plants indig. Colon. Vict.* (Lithogr.) t. 40 (1865), as *Trineuron nivigenum*; Mueller, *Key Syst. Vict. Plants* 2: fig. 89 (1886).

*Vern.*: Snow-wort. *Distr.*: V (Bogong High Plains)—also N.S.W.

#### \*ARTEMISIA L. (1753)

\***A. verlotorum** Lamotte in *Mém. Assoc. Franc. Cong. Clerm.-Ferr.* 511 (1876).

*A. vulgaris* sens. Ewart *Flor. Vict.* 1166 (1931) atque auctt. plur., non L. (1753).

*Illust.*: Butcher, *New ill. Brit. Flor.* 2: fig. 1288 (1961); Ross-Craig, *Drawings Brit. Plants* 16: t. 17 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6: fig. 342 & 343 (1927); Pampanini, *Nuovo G. bot. ital.* 40: 199, t. 6-8 (1933); Hulten, *Svensk. bot. Tidskr.* 23: 498, 501-03 (1929); Burbidge, *Flor. Aust. Cap. Terr.* fig. 368 (1970), as *A. vulgaris* var.

*Vern.*: Chinese Wormwood (Verlot's Mugwort). *Distr.*: BCMNRSTVX—also N.S.W., A.C.T.

[In his account of *A. verlotorum* in Britain J. Brennan, *Watsonia* 1: 209-223 (1950), tabulates the differences between this species and the closely related, often co-extensive *A. vulgaris* L. The former is to be distinguished by its long-rhizomic habit, less dissected cauline leaves in which even the smaller veins are clearly translucent, much more leafy inflorescence, only thinly arachnoid phyllaries and few (usually 2-6) hermaphrodite florets with wider tubes (0.4-0.5 mm. diam. at base). *A. arborescens* L. (Silver Wormwood of Mediterranean coasts) is a dense bush 3-6 ft. high, with woody but brittle branches and relatively large (5-10 mm. diam.) yellow heads in leafy panicles; the much dissected leaves are silvery white and strongly tansy-scented. It was formerly grown as a hardy hedge-plant around gardens in warmer northern districts where it occasionally persists.]

## ISOËTOPSIS Turcz. (1851)

**I. graminifolia** Turcz. in *Bull. Soc. Nat. Moscou* 24: 175, t. 3 (1851).

*Illust.*: Turczaninow (l.c.); Leigh & Mulham, *Pastoral Plants Riverine Plain* 133, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1183 (1957); Hoffmann in Engler & Prantl, *Natürl. Pflfam.* IV 5: 275 fig. 129 M-P (1892)—florets; Burbidge, *Flor. Aust. Cap. Terr.* fig. 374 (1970).

*Vern.*: Grass Cushion. *Distr.*: ABCEFJHKMNPV—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

## ELACHANTHUS F. Muell. (1853)

**E. pusillus** F. Muell. in *Linnæa* 25: 411 (1853).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1184 (1957); Hoffmann in Engler & Prantl, *Natürl. Pflfam.* IV 5: 275 fig. 129 Q-S (1892)—florets.

*Vern.*: Elachanth. *Distr.*: AB—also S.A., N.S.W.

[In Ewart's *Flor. Vict.* 1162 (1931) another member of the tribe *Anthemideæ* was accepted as naturalized, viz. *Lasiospermum radiatum* Trev. (Royal Down-flower), the correct name of which is now *L. bipinnatum* (Thunb., ut *Lidbeckia* sp.) Druce in *Rep. bot. (Soc.) Exch. Cl. Manchr* 1916: 631 (1917). Since the single collection was made near Ballarat in Feb. 1914, *Lasiospermum* has apparently not been noted again in Victoria and is presumed to have died out. W. M. Curtis, *Student's Flor. Tasm.* 2: 350 (1963), records it as local "on roadsides between New Norfolk and Gretna", Tas. This glabrous perennial herb, 1-2 ft. high, has rather fleshy bipinnate leaves 1-2" long, and solitary long-pedunculate heads ( $\pm$  1" wide) with a single row of narrow white ligulate florets; each oblong, 8- to 10-ribbed achene is completely concealed by a covering of dense woolly hairs.]

## Tribe SENECIONEÆ

## SENECIO L. (1753)

[incl. *Erechtites* sens. auctt. Aust., non Rafin. (1817)]

1. All the florets *tubular* 12  
Marginal florets *ligulate* (but ligules sometimes short) 2
2. Ligulate florets usually >4 mm. long, always *conspicuous* and far exceeding the involucre 4  
Ligulate florets up to 4 mm. long, *insignificant* and only slightly exceeding the cylindrical involucre 3
3. Plant *annual*; leaves *linear to lanceolate*, *entire* or with a few remote teeth; heads <6 mm. long; ligules *minute*,  $\pm$  1 mm. long (Wimmera to far N.W. Mallee):

**S. glossanthus** (Sond.) R. O. Belcher in *Ann. Mo. bot. Gdn.* 43: 80 (1956).

*Erechtites glossantha* Sond. in *Linnæa* 25: 524 (1853);

*S. brachyglossus* F. Muell. ex Benth. *Flor. aust.* 3: 670 (1867), non Turcz. (1851).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1185 (1957); Hayward & Druce, *Advent. Flor. Tweedside* 143 (1919)—both as *S. brachyglossus*.

*Vern.*: Groundsel. *Distr.*: ABCDF—also W.A., S.A., N.S.W., Qd.



- Plant *perennial*; leaves *oblong to oblanceolate*, obtuse at apex, boldly but *bluntly and irregularly dentate*, with large toothed auricles; heads 6-9 mm. long; ligules 3-4 mm. (rare coastal plant, from Otways to Tamboon Inlet in E. Gippsland):

*S. orarius* J. M. Black in *Trans. roy. Soc. S. Aust.* 52: 230 (1928).

*Vern.*: Groundsel. *Distr.*: PTZ—also S.A.

- As for the last, but leaves *ovate to broad-lanceolate*, sharply serrate, *acute to acuminate* and always broadest below middle (widespread mountain plant):

*S. linearifolius* A. Rich. [See p. 749]

4. Leaves chiefly *radical*, never glaucous; crenately toothed, oblanceolate; scape with a *single large head*; achene glabrous (creeping alpine perennial, from Baw Baws to Mt. Buffalo, Bogongs & Cobberas):

*S. pectinatus* DC. *Prodr.* 6: 372 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 519, col. (1968); Mass, *Flowers aust. Alps* 11 (1967); Ashby in *Aust. Plants* 5 n. 39: 104, col. (1969), Aves, *Wild Life (Melb.)* 13: 341 (1951).

*Vern.*: Alpine Groundsel. *Distr.*: RSV—also Tas., N.S.W.

- Leaves neither radical (and scape 1-headed) *nor* broad, glaucescent and amplexicaul on the scape 6

- Leaves *glaucous* (at least on under-surfaces), the upper ones broad (8-30 mm.), almost entire and *amplexicaul* (heads large, corymbose) 5

5. Margins of lower leaves regularly *dentate throughout*; ligules seldom up to 4 mm. wide; achenes *glabrous* or with short hairs on the ribs (tender perennial of shaded forests in E. highlands, also Otways and coasts of E. Gippsland):

*S. velleioides* A. Cunn. ex DC. *Prodr.* 6: 374 (1838).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 388, col. (1968); Rosser, *Wildflowers Vict.* 17, col. (1968).

*Vern.*: Forest Groundsel. *Distr.*: KNRSTVWZ—also Tas., N.S.W., Qd.

- Margins of lower leaves *with few teeth*, chiefly toward apex; ligules large, 4-5 mm. wide; achenes usually *densely hairy* all over, more rarely *hirsute* on ribs only (uncommon semi-shrub of Wimmera and Mallee):

*S. magnificus* F. Muell. in *Linnæa* 25: 418 (1853).

*Illust.*: Chippendale, *Wildflowers Cent. Aust.* 105, col. (1968); White, *Trans. roy. Soc. S. Aust.* 39: t. 64 opp. 822, super. (1915); *Garden* 59: 38, 433 (1901); Fitch in *Curtis's bot. Mag.* 126: t. 7803, col. (1901); Morcombe, *Aust. Wildflowers* t. on [57], col. (1970).

*Vern.*: Tall Yellow-top. *Distr.*: BC—also S.A., N.S.W., Cent. Aust.

[The typical form (southern Flinders Range, S. Aust.) has much more congested capitula than in Victorian populations; the latter seem to grade into the shade-

loving *S. velleioides*, to which they are obviously related, and may eventually prove inseparable at the specific level.]

6. Involucral bracts 10-13,  $\pm$  4 mm. long or less, <1 mm. wide; heads *small, very numerous* in large terminal corymbs; leaves entire or denticulate, usually linear but ovate-lanceolate and strongly toothed in some alpine forms (widespread in highland forests throughout State, preferring shady places):

*S. linearifolius* A. Rich. in *Voy. Astrolabe (Bot.)* 2: 129 (1834).

*S. dryadeus* F. Muell. *Key Syst. Vict. Plants* 1: 339 (1888), atque Sieber ex Ewart *Flor. Vict.* 1176 (1931).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 453, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 50, col. (1969).

*Vern.*: Fireweed Groundsel. *Distr.*: DJKMNPSTVWZ—also Tas., N.S.W., A.C.T.

[An extremely variable species, of which one form in the Grampians has non-auriculate, subtire leaves that are *white-cottony beneath*—this is comparable with A. Richard's *S. cinerarioides* (non Humb. et al.), described from the east coast of Australia.]

—Involucral bracts >4 mm. long and at least 1 mm. wide, or, if smaller, then the heads *not* numerous in large corymbs 7

7. Leaves glaucous, linear, *fleshy*, quite *entire*; heads *large*, with ligulate florets 15-25 mm. long (*glabrous* annual of sandy ground in N.W. Mallee):

*S. gregorii* F. Muell. *Enum. Plant. coll. Gregory* 7 (1859).

*Illust.*: Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 41, col. (1963); Chippendale, *Wildflowers Cent. Aust.* 103, col. (1968).

*Vern.*: Fleshy Groundsel. *Distr.*: AB—also W.A., S.A., N.S.W., Qd, Cent. Aust.

—Leaves linear, closely revolute, hairy beneath, almost entire; heads *small*, with ligulate florets 4-6 mm. long (low,  $\pm$  *hairy* semi-shrub on flats of Murray Valley N.W. from Koondrook, also Lake Tyrrell):

*S. behrianus* Sond. & F. Muell. ex Sond. in *Linnaea* 25: 527 (1853).

*Vern.*: Groundsel. *Distr.*: GL—also S.A., N.S.W.

—Leaves neither glaucous and entire *nor* revolute and hairy beneath; ligules 6 mm. or more in length 8

8. Hairy or glabrous *perennials*; if leaves ever pinnatifid, then either quite glabrous or the heads not large (i.e. with involucre <8 mm. wide and ligules <8 mm. long) 10

Pubescent or slightly woolly *annuals*; leaves always *pinnatifid*,  $\pm$  stem-clasping; heads *large and showy* (involucre >8 mm. wide, ligules >8 mm. long) 9

9. Rays *purple* (rarely white); outer involucral bracts conspicuous, *broad, ciliate*; achenes almost *glabrous* (on sandy ground near the sea, from Portland to Lakes Entrance but not continuous):

\**S. elegans* L. *Spec. Plant.* 2: 869 (1753).

*Illust.*: Smith in Marloth, *Flor. S. Afr.* 3<sup>1</sup>: t. 63 fig. B opp. 265, col. (1932); Armstrong, *Field Book W. Wild Flowers* 569 (1915); *Curtis's bot. Mag.* 7: t. 238, col. (1793).

*Vern.*: Purple Groundsel. *Distr.*: EKPTW—also W.A., S.A., Tas., N.Z.

[The white-rayed form has been collected at Peterborough.]

—Rays *bright yellow*; outer bracts very few, *linear, entire*; achenes densely *pubescent* (far N.W. Mallee, also Becac and Pyalong districts):

*S. platylepis* DC. *Prodr.* 6: 371 (1838).

*Vern.*: Groundsel. *Distr.*: ABKN—also S.A., N.S.W., Qd.

10. Involucral bracts with scattered *black papilliform glands*; ligules >12 mm. long; leaves large, glabrous, deeply cut; achenes *all glabrous* (in shaded forests of E. Highlands, also Mt. Macedon and Major Mitchell Plateau in Grampians):

*S. vagus* F. Muell. in *Trans. phil. Soc. Vict.* 1: 46 (1855).

*Illust.*: Galbraith, *Wildflowers Vict.* ed. 3: t. 173 (1967); Mueller, *Key Syst. Vict. Plants* 2: fig. 90 (1886); Mueller, *Plants indig. Colon. Vict.* t. 46 (1864–65).

*Vern.*: Saw Groundsel. *Distr.*: JNSTWZ—also Tas. (Flinders Id), N.S.W.

—Involucral bracts *not glandular*; ligules <12 mm. long 11

11. Plant always  $\pm$  *hairy*; leaves always bipinnatisect; heads in *dense compound corymbs*; ligules usually <7 mm. long; ray achenes glabrous, disk achenes  $\pm$  *hairy* (scattered weed in cooler parts of W., also W. & S. Gippsland where locally frequent and troublesome):

\**S. jacobæa* L. *Spec. Plant.* 2: 870 (1753).

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 148 col., 150 (1965), also in *J. Dep. Agric. W. Aust.* ser. 3, 7: 166, t. opp. 164 (1958); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 39, col. (1958); Abrams, *Ill. Flor. Pacific States* 4: fig. 5785 (1960); Butcher, *New ill. Brit. Flor.* 2: fig. 1227 (1961); Ross-Craig, *Drawings Brit. Plants* 16: t. 27 (1961); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 28 A & B (1951); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 267 fig. 3, col. (1928).

*Vern.*: Ragwort. *Distr.*: HKNPT—also W.A., S.A., Tas., N.S.W., N.Z.

—Plant *glabrous* or nearly so; leaves extremely variable, entire to bipinnatisect; heads few or several but always *loosely arranged*; ligules usually >7 mm. long; ray and disk achenes *similar*, glabrous or pubescent (bracts  $\pm$  2-ribbed):

*S. lautus* Forst. f. ex Willd. *Spec. Plant.* 3: 1981 (1803)

[incl. *S. spathulatus* A. Rich. *Voy. Astrolabe (Bot.)* 2: 125 (1834)].

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 288, col. (1968); Scarth-Johnson, *Wildflowers N.S.W.* 37, col. (1968); Mass, *Flowers aust. Alps* 13 (1967); Hösel, *Wildflowers S.-E. Aust.* 37, col. (1969); Garnet, *Vegetation Wyperfeld Nat. Park* fig. 15 n. 409 (1965); Black, *Flor. S. Aust.*

ed. 2: fig. 1186 (1957); Lee, *Wild Life (Melb.)* 9: 329 (1947); Fitch in Hooker, *Flor. Tasm.* 1: t. 64 A, col. (1857), as *S. capillifolius*.  
*Vern.*: Variable Groundsel. *Dist.*: ABCDEFHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

S. I. Ali, in his taxonomic interpretations of the "*Senecio laetus* complex in Australia", *Aust. J. Bot.* 17: 161-176 (1969), has found that achenial differences based on the presence or absence of hairs are inconstant and not correlated with other morphological features. In recognizing four Australian subspecies within the general circumscription of *S. laetus*, he has relied upon leaf-form as the major criterion. Following is a brief key to these taxa, all of which are represented in Victoria, the subsp. *laetus* being confined to New Zealand:

Leaf-outline *spathulate*, the lobes (when present) shortly oblong, *blunt* and often with secondary lobing (restricted to alps and subalps above 4500 ft. alt.):

subsp. *alpinus* S. I. Ali in *Aust. J. Bot.* 17: 167 (1969).

—Leaf-outline *not* as above

Leaves with few or many *narrow-linear to almost filiform* segments (sand-hills of Mallee, also Bacchus Marsh district):

subsp. *dissectifolius* S. I. Ali *l.c.* 168 (1969).

*S. capillifolius* Hook. f. in Hook. *Lond. J. Bot.* 6: 123 (1847).

—Leaves oblanceolate to lanceolate in outline, the teeth or ultimate lobes *relatively short*, never filiform

Plant robust, >52 cm. (21") high; largest cauline leaf >5.5 cm. long,  $\pm$  1.2 cm. broad or more; heads often *numerous* (widespread in cooler districts, often in montane forest):

subsp. *lanceolatus* (Benth.) S. I. Ali *l.c.* 173 (1969).

*S. laetus* var. *lanceolatus* Benth. *Flor. aust.* 3: 667 (1867).

Plant not robust, <52 cm. high; foliage often fleshy; largest cauline leaf <5.5 cm. long, <1.2 cm. broad; heads very *few* (strictly coastal, usually on dunes):

subsp. *maritimus* S. I. Ali *l.c.* 171 (1969).

*S. spathulatus* A. Rich. *Voy. Astrolabe (Bot.)* 2: 125 (1834).

12. Glabrous *climbing perennial*; leaves *ivy-like*, 2-4" long & wide, 5- to 7-lobed; heads small, in dense terminal corymbs, sweetly fragrant; achenes glabrous (southern districts from Otways to Orbost, chiefly coastal):

\**S. mikanioides* Otto ex Walp. in Otto & Dietr. *Allg. Gartenztg.* 13: 42 (1845).

*Illust.*: Curtis, *Student's Flor. Tasm.* 2: 368 fig. 85 (1963); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 28 c (1951); Abrams, *Ill. Flor. Pacific States* 4: fig. 5791 (1960); Johnson in Trelease, *Rep. Mo. bot. Gdn* 8: t. 32 (1897).  
*Vern.*: Ivy Groundsel (Cape Ivy). *Dist.*: JKNPSTW—also S.A., Tas., N.S.W., N.Z.

- Neither climbing *nor* the leaves ivy-like and isodiametric 13
13. Involucral bracts (phyllaries) 16 or more 22  
 Involucral bracts 11-15 (usually about 12) 17  
 Involucral bracts 5-10 (usually about 8) 14
14. Florets *conspicuous*, yellow, *exceeding the involucre* even before anthesis, *none of them filiform*; bracts *broadish & yellowish* (semi-shrubs) 16  
 Florets *inconspicuous*, *not exceeding the involucre* before maturity, at least the *marginal ones filiform*; bracts *very narrow, greenish* (herbs) 15
15. Leaves somewhat *arachnoid*, often linear-lanceolate and *evenly denticulate*; achenes with appressed hairs *along the sharp narrow ribs*; florets always about twice the number of bracts (abundant in cool shaded situations almost throughout State, ascending to subalps, but only the coarser, broader-leaved and biserrate var. *picridioides* in Mallee):

*S. minimus* Poir. in *Encycl. méth. Bot.* suppl. 5: 130 (1817).

*Erechtites prenanthoides* DC. *Prodr.* 6: 296 (1838), non *Senecio prenanthoides* A. Rich. (1834).

*Illust.*: Hayward & Druce, *Advent. Flor. Tweedside* 135 (1919).

*Vern.*: Fireweed. *Distr.*: ACDEJKNMNPSTVWZ—also W.A., S.A., Tas., N.S.W., Qd, N.Z.

[Populations from drier parts of W. Victoria (e.g. Coimadai Ck, Little Desert & Far N.W. Mallee), also from South and Western Australia, are referable to the var. *picridioides* (Turcz., ut *Erechtites* sp.) R. O. Belcher in *Ann. Mo. bot. Gdn* 43: 48 (1956), differing from the var. *minimus* in its broader, lobate, biserrate leaves and universal vestiture of hispid multicellular hairs; the foliage approaches that of *S. biserratus* rather than that of typical *S. minimus*.]

—Leaves membranous,  $\pm$  *glabrous*, *irregularly biserrate*, the upper ones subamplexicaul; achenes with subappressed hairs *in grooves* between the broad obtuse ribs; florets sometimes hardly more in number than bracts (scattered along coast, from Port Fairy to Mallacoota, also Grampians):

*S. biserratus* R. O. Belcher in *Ann. Mo. bot. Gdn* 43: 43 (1956).

*S. flaccidus* A. Rich. in *Voy. Astrolabe (Bot.)* 2: 110 (1834), non Lessing (1830).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1190 (1957), as *S. minimus*; Black, *Trans. roy. Soc. S. Aust.* 43: t. 8 opp. 45 (1919), as *Erechtites prenanthoides*.

*Vern.*: Groundsel. *Distr.*: DEJTWZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

16. Leaves *sessile and auriculate* at base, *broadly lanceolate* (1-3 cm. wide), *irregularly dentate or crenate*, usually *glabrous* (and often glaucous) on both surfaces (frequent on coast, also rocky hills as far inland as Mt. Beckworth and Tolmie):

*S. odoratus* Hornem. *Hort. Hafn.* 2: 809 (1815).

*Illust.*: Black, *Trans. roy. Soc. S. Aust.* 36: t. 3, fig. infer. (1912)—var. *obtusifolius*; Garnet, *Wildflowers Wilson's Prom.* fig. 843 (1971).

*Vern.*: Scented Groundsel. *Distr.*: DEJKNPRTWX—also S.A., Tas., N.S.W., Qd, Cent. Aust.

—Leaves *sessile* or shortly stalked, *non-auriculate*, linear to *narrow-lanceolate* (rarely 1 cm. wide), *glabrous*, the margins often entire and *revolute* (scattered through W., N.W., Murray & Goulburn Valleys):

*S. cunninghamii* DC. *Prodr.* 6: 371 (1838).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1188 (1957)—capitulum only.

*Vern.*: Groundsel. *Distr.*: ABCDFGHLMP—also W.A., S.A., N.S.W., Qd.

—Leaves conspicuously *petiolate*, *non-auriculate*, *broad-lanceolate* (1-4 cm. wide), entire or regularly denticulate, green and glabrous above but with dense *white-cottony indumentum beneath* (restricted to sandstone hills of far W.—Mt. Arapiles, Black & Dundas Ranges):

*S. hypoleucus* F. Muell. ex Benth. *Flor. aust.* 3: 672 (1867).

*S. odoratus* Hornem. var. *petiolata* Sond. in *Linnæa* 25: 526 (1853).

*Vern.*: Groundsel. *Distr.*: CD—also S.A.

17. Florets yellow, always *exceeding the involucre*, none of them filiform; bracts about 12, *with spreading or recurved tips*; leaves linear to oblanceolate, petiolate, usually entire with *revolute margins*, at least the under-surfaces  $\pm$  cottony (rare and localized, on Macalister R. and at Lake Omeo):

*S. georgianus* DC. *Prodr.* 6: 371 (1838).

*Vern.*: Groundsel. *Distr.*: SV—also W.A., S.A., N.S.W.

—Florets *not* exceeding the involucre before maturity, at least the marginal ones *filiform*; tips of bracts *rarely spreading* 18

18. Leaves *glabrous*, *runcinately pinnatifid* with long, retrorse, slender, acute, often toothed segments; involucre 8-10 mm. long (tall herb 3-5 ft., along flood-plain of Murray R. from Cohuna district N.W. to Lake Walla-walla):

*S. runcinifolius* J. H. Willis in *Proc. roy. Soc. Qd* 62: 106, t. 7 fig. 34-37 (1952).

*Erechtites picridioides* Sond. & F. Muell. ex Sond. in *Linnæa* 25: 523 (1053), *non* Turcz. (1851).

*Illust.*: Willis (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 138, col. (1965)

*Vern.*: Tall Groundsel. *Distr.*: AFGL—also S.A., N.S.W.

—Leaves *never* retrorsely lobed; involucre <8 mm. long (except in *S. quadridentatus* which has linear to lanceolate,  $\pm$  entire cottony-arachnoid leaves) 19

19. Leaves *boldly toothed*, incised or irregularly lobed; achenes shortly *cylindric*, 1.5-2 mm. long (annuals) 21

Leaves *entire or denticulate*, usually with a dense cottony-arachnoid indumentum; achenes  $\pm$  *fusiform*, >2 mm. long (chiefly perennial)

20

20. Leaves *linear to lanceolate*, the lower and larger <1 cm. wide; involucre bracts 6.5-10 mm. long (widespread and abundant almost throughout State):

*S. quadridentatus* Labill. *Nov. Holl. Plant. Specim.* 2: 48, t. 194 (1806).  
*Erechtites quadridentata* (Labill.) DC. *Prodr.* 6: 295 (1838);  
*E. mixta* sens. Ewart. *Flor. Vict.* 1180 (1931), *non* (A. Rich) DC. (1838).

*Illust.*: Labillardière (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 139, col. (1965); Pearce, *J. Dep. Agric. W. Aust.* ser. 4, 4: 83 (1963), as *Erechtites quadridentata*; Garnet, *Wildflowers Wilson's Prom.* fig. 845 (1971).

*Vern.*: Cotton Fireweed. *Distr.*: ABCDEFGHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z., Timor.

—Leaves *oblanceolate*, the lower 1-3 cm. wide; involucre bracts <6.5 mm. long (frequent in alpine & subalpine tracts of E. highlands):

*S. gunnii* (Hook. f.) R. O. Belcher in *Ann. Mo. bot. Gdn* 43: 60 (1956).  
*Erechtites gunnii* Hook. f. in Hook. *Lond. J. Bot.* 6: 122 (1847);  
*E. quadridentata* var. *gunnii* (Hook. f.) Benth. *Flor. aust.* 3: 660 (1867).

*Illust.*: Fitch in Hooker f., *Flor. Tasm.* 1: t. 63, col. (1857), as *Erechtites gunnii*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 375 (1970).

*Vern.*: Groundsel. *Distr.*: RSVWZ—also Tas., N.S.W., A.C.T.

[Intermediate forms connect this highland plant with typical narrow-leaved *S. quadridentatus*, and its status as a distinct species is open to question.]

21. Base of involucre *woolly*; leaves *arachnoid beneath*, sparsely arachnoid to glabrate above; inflorescence usually *congested* (throughout cooler parts of State):

*S. glomeratus* Desf. ex Poir. in *Encycl. méth. Bot.* suppl. 5: 130 (1817).  
*Erechtites arguta* DC. *Prodr.* 6: 296 (1838).

*Illust.*: Greenman, *Ann. Mo. bot. Gdn* 4: t. 19 opp. 292 (1917), as *Erechtites arguta*.

*Vern.*: Fireweed. *Distr.*: BCDHJKLMNPSTWZ—also W.A., S.A., Tas., N.S.W., N.Z. (introd. in Calif.).

—Base of involucre *glabrous*; leaves with *crisped multicellular hairs beneath* and  $\pm$  *scabrid above* (the hairs with tuberculate bases); inflorescence *open* and spreading (widespread except in N.W. Mallee, N. plains and alps):

*S. hispidulus* A. Rich. in *Voy. Astrolabe (Bot.)* 2: 92, t. 34 (1834).  
*Erechtites arguta* sens. Ewart *Flor. Vict.* 1180 (1931) pro maj. part.,  
 atque Benth. *Flor. aust.* 3: 659 (1867) pro maj. part.

*Illust.*: Richard (*l.c.*).

*Vern.*: Fireweed. *Distr.*: CDEHJKNPSTVZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N. Terr., N.Z.

[The var. *dissectus* (Benth., ut *Erechtites arguta* var.) R. O. Belcher in *Ann. Mo. bot. Gdn* 43: 69 (1956) is distinguished by its deeply pinnatisect leaves with numerous acutely denticulate lobes; it is widespread in northern and western Victoria, e.g. Warby Range, Upper Murray & Upper Snowy Rivers, Mt. Ida, Grampians.]

22. Leaves thin,  $\pm$  *glabrous*, pinnatifid with widely separated toothed lobes, the upper amplexicaul; small outer bracts of involucre *black-tipped* (weak annual weed of settlements, seldom attaining 40 cm. high):

\**S. vulgaris* L. *Spec. Plant.* 2: 867 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1189 (1957); Ewart, *Flor. Vict.* fig. 347 (1931); Maiden, *Weeds N.S.W.* t. opp. 104, col. (1920), also in *Agric. Gaz. N.S.W.* t. opp. 246, col. (1917); Ross-Craig, *Drawings Brit. Plants* 16: t. 32 (1961); Butcher, *New ill. Brit. Flor.* 2: fig. 1233 (1961); Adams, *Ill. Flor. Pacific States* 4: fig. 5787 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 267 fig. 4, col. (1928).

*Vern.*: Common Groundsel. *Distr.*: AJMNPSTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Leaves thickish,  $\pm$  *scabrid* above and sparsely arachnoid beneath, entire to minutely or coarsely (and remotely) toothed, *never amplexicaul*; none of the bracts black-tipped (rigid and apparently perennial plant, usually >40 cm. high, scattered through open grassy tracts in W., also at Lake Omeo, Amboyne Ck and Cape Howe):

*S. squarrosus* A. Rich. in *Voy. Astrolabe (Bot.)* 2: 107, t. 35 (1834).

*Erechtites hispidula* sens. Ewart *Flor. Vict.* 1179 (1931), atque Benth. *Flor. aust.* 3: 660 (1867) pro parte, *non* (A. Rich.) DC. (1838).

*Illust.*: Richard (*l.c.*).

*Vern.*: Groundsel. *Distr.*: CDEJKNPVWZ—also Tas., N.S.W.

[In his posthumous *Flor. N.Z.* 1: 730-36 (1961), H. H. Allan has reverted to the use of *Erechtites* for those non-radiate species that R. O. Belcher had removed to the genus *Senecio*—q.v. Belcher's "Erechtithoid species of *Senecio* in Australasia", in *Annals of the Missouri Botanical Garden* 43<sup>1</sup>: 37-83 (Feb. 1956). The latter concept is adopted in the present handbook, as in other recent State floras of the Commonwealth. Belcher (*l.c.*, p. 64) recognizes *S. laticostatus* Belcher as distinct from *S. glomeratus*, having coarsely lobate arachnoid leaves and further differing from the latter in its acuminate involucre bracts without scarious tips, few short broad disk florets and, especially, in the achenes with 5 high narrow *fin-like* ridges. Since *S. laticostatus* is known only by a single specimen (from "flats beyond the Brodribb River", leg. F. Mueller Jan. 1855) and needs further investigation, it has been omitted from the present key; Bentham, in *Flor. aust.* 3: 659 (1867), had described it briefly as *Erechtites arguta* var. *microcephala*.

Varieties of *S. nebrodensis* L. (Mediterranean region) and *S. pterophorus* DC. (South Africa) were recorded as appearing in the Melbourne area—at Coode Island (Oct. 1908) and North Melbourne (Mar. 1909) respectively—but they apparently failed to spread from the original points of introduction; both have



yellow-rayed heads and *S. pterophorus*, a shrub to 5 ft. high, is abundant on the Mt. Lofty Ranges above Glen Osmond, S.A. Annual garden "cinerarias" (widely grown in Victoria) are descended from the purplish-flowered *S. cruentus* DC. of the Canary Islands, while the robust, perennial (to 8 ft.), very large-leaved Velvet Groundsel of gardens is *S. petasitis*, native to Mexico.]

### ARRHENECHTHITES Mattf. (1938)

**A. mixta** (A. Rich.) R. O. Belcher in *Ann. Mo. bot. Gdn* 43: 75 (1956).

*Senecio mixtus* A. Rich. in *Voy. Astrolabe (Bot.)* 2: 112, t. 36 (1834).

*Illust.*: Richard (l.c.).

*Vern.*: Purple Fireweed. *Distr.*: VZ (far E. highlands)—also N.S.W., A.C.T.

[The material (from Dimboola) upon which Ewart based his record of "*Erechthites mixta* DC." in *Flor. Vict.* 1180 (1931) is referable to *Senecio quadridentatus* Labill., the collection in Melbourne Herbarium having been misidentified.]

### BEDFORDIA DC. in Guillem. (1833)

**B. salicina** (Labill.) DC. *Prodr.* 6: 441 (1838).

*Cacalia salicina* Labill. *Nov. Holl. Plant. Specim.* 2: 37, t. 179 (1806).

*Illust.*: Labillardière (l.c.); Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 447, col. (1968); Galbraith, *Wildflowers Vict.* ed. 3: t. 175 (1967); King & Burns, *Wildflowers Tasm.* 59, col. (1969); Ewart, *Handb. For. Trees* t. 228 (1925); Burbidge, *Flor. Aust. Cap. Terr.* fig. 376 (1970); Hösel in Millett, *Native Trees Aust.* 92 & 93, col. (1971).

*Vern.*: Blanket-leaf. *Distr.*: JKNSTVWZ—also Tas., N.S.W., A.C.T.

## Tribe \*CALENDULÆ

### \*CALENDULA L. (1753)

Lower leaves *spathulate to ± obovate*; flower-heads >1" diam. (up to 3"); fruiting peduncles *stiffly erect*; most achenes with beaks and *rigid wings* (frequent garden-escape seeding copiously from year to year):

**\*C. officinalis** L. *Spec. Plant.* 2: 921 (1753).

*Illust.*: Hay & Syngé, *Dict. gdn Plants* tt. 248-50, col. (1969)—cultivars; Lawrence, *Taxonomy vasc. Plants* fig. 300 Ba-Be (1951)—caption in ed. 1 transposed with that of fig. 299; Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: t. 269 fig. 1, col. (1928), also *ibid.* fig. 505-508 (1928); Bailey, *Standard Cycl. Hort.* 1: fig. 741 (1935); Curtis's *bot. Mag.* 59: t. 3204, col. (1832).

*Vern.*: Garden Marigold. *Distr.*: GHN (sporadic)—also Tas.

Lower and upper leaves *lanceolate to oblong-lanceolate*; flower-heads <1" diam.; fruiting peduncles *recurved*; some achenes *without wings* (occasional weed of crop-land and waste places, chiefly in Mallee):

\**C. arvensis* L. *Spec. Plant.* ed. 2, 2: 1303 (1763).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1191 (1957); Abrams, *Ill. Flor. Pacific States* 4: fig. 5813 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6: t. 269 fig. 2, col. (1928), also *ibid.* fig. 509 & 510 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1545, col. (1923); Coste, *Flor. Franc.* 2: fig. 1925 (1903); Arechavaleta, *An. Mus. nac. Montevideo* 6: 406 (1908).

*Vern.*: Field Marigold. *Distr.*: BC—also S.A., Tas., N.S.W.

\**CHRYSANTHEMOIDES* Med. (1789)

\**C. monilifera* (L.) T. Norlindh *Stud. Calendul.* 1: 374 (1943).

*Osteospermum moniliferum* L. *Spec. Plant.* 2: 923 (1753).

*Illust.*: Garnet, *Vict. Nat.* 82: 226 & 227 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1193 (1957); Rice, *Wildflowers Cape Good Hope* t. 82 fig. 3, col. (1951); Marloth, *Flor. S. Afr.* 3: t. 67 fig. D, col. (1932)—fruits, as *Osteospermum moniliferum*; Levyns, *Guide Flor. Cape Penins.* 267 (1929), as *O. moniliferum*; Louth in Wood & Evans, *Natal Plants* 1: t. 55 (1899), as *O. moniliferum*.

*Vern.*: Boneseed (Bitou Bush; Jungle Flower). *Distr.*: ACFGHJKMNPS—also S.A., Tas., N.S.W.

\**OSTEOSPERMUM* L. (1753)

\**O. clandestinum* (Lessing) T. Norlindh *Stud. Calendul.* 1: 328 (1943).

*Tripteris clandestina* Lessing in *Linnæa* 6: 97 (1831).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1192 (1957); Carne & Gardner, *J. Dep. Agric. W. Aust.* ser. 2, 2: 404 (1925), as *Tripteris clandestina*; Black, *Naturalised Flor. S. Aust.* 87 (1909), as *T. clandestina*; Marloth, *Flor. S. Afr.* 3: t. 67 fig. A, col. (1932), as *T. clandestina*.

*Vern.*: Tripteris (Stinking Roger—W.A.). *Distr.*: ABFG—also W.A., S.A.

[South African *Dimorphotheca pluvialis* (L.) Moench (Cape Marigold), also in the tribe *Calenduleæ*, persists in some gardens and may occasionally escape. This stout glandular annual, to 2 ft., has toothed oblong-cuneate leaves and pedunculate heads with showy white rays that are bluish-purple on the underside. It is recorded as naturalized in South Australia.]

Tribe ARCTOTIDÆE

\**ARCTOTIS* L. (1753)

\**A. stæchadifolia* Berg. *Descr. Plant. Cap.* 324 (1767).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1194 (1957); Smith in *Gdnrs' Chron.* ser. 3, 30: 109 (1901); Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 310 fig. 142 A & B (1892)—fruit.

*Vern.*: White Arctotis. *Distr.*: EP—also S.A., Tas.

## \*BERKHEYA Ehrh. (1788)

\**B. rigida* (Thunb.) Ewart, White & Rees in *Proc. roy. Soc. Vict.* new ser. 22: 20 (1909).

*Stobæa rigida* Thunb. *Prodr. Plant. capens.* 141 (1800).

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 152 col., 153 (1965).

*Vern.*: African Thistle. *Distr.*: N (Port Melbourne & Bacchus Marsh)—also S.A.

## CYMBONOTUS Cass. (1825)

Achene *not gibbous*, almost straight, *finely rugulose* on convex side and with conspicuous *transverse rugæ* between the 4 longitudinal ribs on the *flattened*, only slightly hollowed concave face (widespread and locally frequent almost throughout State, often in grassy dells and along streams in montane forest):

*C. preissianus* Steetz in Lehm. *Plant. Preiss.* 1: 486 (1845).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 349, col. (1968); Black, *Flor. S. Aust.* ed. 2: fig. 1195, also fig. 1148 p, r, s, v & w (1957), as *C. lawsonianus*; Beauverd, *Bull. Soc. bot. Genève sér. 2*, 7: 45 fig. IV 10 (1915)—achenes, as *C. lawsonianus*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 377 A (1970).

*Vern.*: Austral Bear's-ear. *Distr.*: ACDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T.

Achene *curved and gibbous* near summit, almost *smooth* on convex side and *without* any transverse rugæ between ribs on the *deeply cavernous* concave face (very localized in N.W. Mallee and E. highlands; known with certainty only from Kulkyn Nat. Forest, Buchan & Omeo districts):

*C. lawsonianus* Gaudich. in Freyc. *Voy. aut. Monde (Bot.)* 462, t. 86 (1829).

*Arctotis australiensis* Beauverd in *Bull. Soc. bot. Genève sér. 2*, 7: 44, 45 fig. IV 1-9 (1915).

*Illust.*: Gaudichaud (*l.c.*); Beauverd (*l.c.*); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 160 (1906); Burbidge, *Flor. Aust. Cap. Terr.* fig. 377 B (1970)—achenes.

*Vern.*: Austral Bear's-ear. *Distr.*: AW—also N.S.W., A.C.T., Qd.

## \*ARCTOTHECA J. Wendl. (1798)

Stems *decumbent or ascending*, *not rooting*; pappus of 6-8 small, obtuse, translucent *scales*; achenes concealed by a covering of *dense woolly hairs* (prolific fleshy annual weed of open ground throughout State, excepting alps, the massed heads in springtime often turning plains and hillsides from green to sulphur-yellow):

\**A. calendula* (L.) M. Levyns in *J. S. Afr. Bot.* 8: 284 (1942).

*Arctotis calendula* L. *Spec. Plant.* 2: 922 (1753);

*Cryptostemma calendulaceum* R. Br. in *Ait. Hort. kew.* ed. 2, 5: 141 (1813).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1196 (1957), as *Cryptostemma calendula*; *Honey Flor. Vict.* (Dep. Agric.) ed. 5: fig. 89 (1949), as *C. calendulaceum*; Whittet, *Weeds* (N.S.W. Dep. Agric.) tt. 5 & 34, col. (1958), as *C. calendula*; Atkinson, *J. N.Z. Dep. Agric.* 12: 32-34 (1916); Wauer in Ewart, *Weeds* . . . *Vict.* t. opp. 38, col. (1909), also in *J. Dep. Agric. Vict.* 5: t. 17 opp. 606, col. (1907), as *C. calendulacium*; *Curtis's bot. Mag.* 48: t. 2252, col. (1822), as *C. calendulacea*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 378 (1970).  
*Vern.*: Cape Weed. *Distr.*: ABCDEFHJKMNPSTVWZ—W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

Stems *prostrate*, *rooting* at the nodes; pappus *absent*; achenes glabrous or somewhat hairy but *never densely woolly* (rare perennial of grassland at Craigieburn and Orbost):

- \**A. prostrata* (Salisb.) J. Britten in *J. Bot., Lond.* 54: 61 (1916).  
*Arctotis prostrata* Salisb. *Prodr. Stirp.* 210 (1796);  
*Arctotheca repens* J. Wendl. *Hort. Herrenh.* 8, t. 6 (1798).

*Illust.*: Wendland (*l.c.*); Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 310 fig. 142 D (1892)—achene.

*Vern.*: Creeping Bear's-ear. *Distr.*: NW—also Qd.

[The genus *Gazania*, of South Africa, differs from other genera in the tribe *Arctotideæ* by virtue of its *fused involucrel bracts* the bases of which form a fleshy cup beneath the florets. Several species and numerous cultivars are popular in gardens throughout Victoria. The various showy hybrids of *G. ringens* R. Br., with yellow to orange rays circled at the base by spots of black or brown, are very hardy lax perennials, admirable as quick cover-plants along road and railway embankments; their prostrate branches root freely, and sizeable colonies may persist for many years.]

## Tribe CYNARÆ

### \*ARCTIUM L. (1753)

- \**A. lappa* L. *Spec. Plant.* 2: 816 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 17: t. 2 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1295 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5894 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: fig. 529 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1631, col. (1923), as *Lappa communis*; *Agric. Gaz. N.S.W.* 21: t. opp. 730 (1910); Georgia, *Manual Weeds* fig. 353 (1914).

*Vern.*: Burdock. *Distr.*: EKNT—also N.S.W., Qd, N.Z.

### \*CYNARA L. (1753)

- \**C. cardunculus* L. *Spec. Plant.* 2: 827 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1236 (1957); Parsons, *J. Dep. Agric. Vict.* 57: 579-584 (1959); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 130 (1949); Abrams, *Ill. Flor. Pacific States* 4: fig. 5901 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>:

fig. 619-21 (1928); Arechavaleta, *Flor. Urug.* 3: t. 91 (*An. Mus. nac. Montevideo* 6: 410) (1908); Coste, *Flor. Franc.* 2: fig. 2002 (1903); *Curtis's bot. Mag.* 60: t. 3241, col. (1883).

*Vern.*: Spanish Artichoke (Wild Artichoke, Cardoon). *Distr.*: CJMNT—also W.A., S.A., N.S.W.

\**CIRSIIUM* Adans. (1763)

1. Heads *sessile*; terminal spine of each involucre bract *recurved*, pinnate with 2-8 lateral spinules; florets similar, all bisexual; leaves white-downy, with *closely ciliate-spinulose edges* that bear long *yellow distant spines*, the strongly reticulate lamina narrow-linear and mostly <8 mm. wide (pale stout annual weed of Wimmera & Mallee):

\**C. acarna* (L.) Moench *Meth. Plant. Suppl.* 226 (1802).

*Carduus acarna* L. *Spec. Plant.* 2: 820 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1238 (1957); Poinsett in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1556, col. (1923), as *Picnomon acarna*; Javorka & Csapody, *Icon. Flor. Hungar.* 540 (1933); Fiori & Paoletti, *Icon. Flor. Ital.* 452 (1904); Coste, *Flor. Franc.* 2: fig. 2015 (1903), as *Picnomon Acarna*; Reichenbach, *Icon. Flor. germ.* 15: t. 820, col. (1853).

*Vern.*: Soldier Thistle. *Distr.*: ABC—also S.A.

[In his *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 328 (1965), H. J. Eichler segregates this species from *Cirsium*, as *Picnomon acarna* (L.) Cass.]

—Heads  $\pm$  *pedunculate*; terminal spine of each involucre bract *straight* or nearly so, *simple*; leaf-lamina >8 mm. wide 2

2. Leaves roughened on the upper-surface with copious *small prickles*, their bases long-decurrent in *spiny wings along stem*; involucre  $\pm$  1" long; florets purple, *similar*, all bisexual (very prickly, cottony biennial weed 2-4 ft. high, frequent in open places throughout State):

\**C. vulgare* (Savi) Ten. *Flor. Napol.* 5: 209 (1835-36).

*Carduus vulgaris* Savi *Flor. Pisana* 2: 241 (1798);

*Carduus lanceolatus* L. *Spec. Plant.* 2: 821 (1753);

*Cirsium lanceolatum* (L.) Scop. *Flor. carniol.* ed. 2, 2: 130 (1772), non Hill (1769).

*Illust.*: Meadly, *Weeds W. Aust.* 154 col., 156 (1965); Meadly, *J. Dep. Agric. W. Aust.* ser. 3, 8: 34, t. opp. 32 col. (1959); Black, *Flor. S. Aust.* ed. 2: fig. 1237 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: fig. 92 a (1949), as *C. lanceolatum*; Ross-Craig, *Drawings Brit. Plants* 17: t. 10 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1302 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5903 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 564, 565, 573-76 (1928), as *C. lanceolatum*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 391 (1970).

*Vern.*: Spear Thistle. *Distr.*: ACDEFHJKLMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Leaves *without prickles* on upper-surface, their bases *not* decurrent in spiny wings; involucre <1" long; florets of *two kinds* 3

3. Plant *perennial*, <3 ft. tall; leaves minutely *pubescent*, with *inconspicuous* *nervation*; heads <2 cm. long, in a loose *corymb*, either male or female; bracts dark-tipped, copiously *woolly-ciliate* on margins; florets *all with a plumose pappus* (scattered through W. half of State, also Gippsland):

\**C. arvense* (L.) Scop. *Flor. carniol.* ed. 2, 2: 126 (1772).

*Serratula arvensis* L. *Spec. Plant.* ed. 2, 2: 1149 (1763).

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 158 col., 159 (1965), also in *J. Dep. Agric. W. Aust.* ser. 3, 6: t. opp. 696 col., 698 (1957); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 33, col. (1958); Davey, *J. Dep. Agric. Vict.* 20: 290 & 291 (1922), as *Carduus arvensis*; Ross-Craig, *Drawings Brit. Plants* 17: t. 12 (1962); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 271 fig. 1, col. (1928).

*Vern.*: Perennial Thistle (Californian Thistle). *Distr.*: BCGNPTW—also S.A., Tas., N.S.W., N.Z.

—Plant *annual*, 3-5 ft. tall; leaves *glabrescent*, with *strong, rib-like pale lateral nerves* terminating in marginal spines; heads 2 cm. long or more; bracts pale yellowish, lustrous, *glabrous* or nearly so; inner florets *bisexual*; outer florets *neuter*, with *pappus reduced to a few simple bristles* (apparently confined in Vic. to Mansfield district):

\**C. syriacum* J. Gärtner. *Fruct. & Semin. Plant.* 2: 383, t. 163 fig. 2 (1791).

*Illust.*: Gärtner (*l.c.*); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1555, col. (1923), as *Notobasis syriaca*; Post & Dinsmore, *Flor. Syria, Palestine & Sinai* ed. 2, 2: 92 (1933), as *N. syriaca*; Coste, *Flor. Franc.* 2: fig. 2014 (1903), as *N. syriaca*; Fiori & Paoletti, *Icon. Flor. Ital.* 452 (1904).

*Vern.*: Syrian Thistle. *Distr.*: S.

### \*CARDUUS L. (1753)

Lower leaves 2-4" wide, the lobes *broadly oblong-deltoid*; decurrent wings on stem >5 mm. wide; heads *clustered, sessile, subcylindric*,  $\pm$  1 cm. wide; corolla 10-12 mm. long; achenes 3-4 mm. long (annual weed to 4 ft. high, abundant in open tracts throughout State, excepting alps):

\**C. tenuiflorus* Curt. *Flor. lond.* Fasc. 6: t. 55 (1789).

*C. pycnocephalus* sens. Ewart *Flor. Vict.* 1186 (1931) pro part., *non strict.* L. *Spec. Plant.* ed. 2, 2: 1151 (1763).

*Illust.*: Curtis (*l.c.*); Black, *Flor. S. Aust.* ed. 2: fig. 1239 (1957); Ward, *Tasm. J. Agric.* new ser. 18: 63 upper fig. (1947), as *C. pycnocephalus*; O'Neil, *J. Dep. Agric. S. Aust.* 61: 509-510 (1958); Ross-Craig, *Drawings Brit. Plants* 17: t. 6 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1298 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5937 (1960).

*Vern.*: Slender Thistle. *Distr.*: ABCDEGHJMNPRSTVWZ (letters include range of *C. pycnocephalus*)—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

[The true South-European *C. pycnocephalus* differs in having fewer larger heads, longer corollas (15-17 mm.), larger achenes (4-5 mm. long), the thickened middle bracts of involucre conspicuously *arachnoid* but *not* scarious on margins, and

inner bracts (*no longer* than florets) minutely *scabrid over the whole dorsal surface*. Although hitherto considered doubtfully Victorian, through confusion with *C. tenuiflorus*, *C. pycnocephalus* has quite recently been noted as coextensive in some, and exclusive in many, parts of the State.]

Lower leaves <2" wide, the lobes *narrowly triangular* and cut almost to midrib; decurrent wings on stem <5 mm. wide; heads *solitary, long-pedunculate, hemispherical*, sometimes nodding, 2-4 cm. wide; corolla  $\pm$  20 mm. long (biennial to 3 ft. high, localized in Bairnsdale & Orbost districts where first reported in 1969; also at Biggara, Dec. 1970):

\**C. nutans* L. *Spec. Plant.* 2: 821 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 17: t. 7 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1299 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5936 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 541-44 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1581, col. (1923); Atkinson in *J. N.Z. Dep. Agric.* 12: 179 (1916).

*Vern.*: Musk Thistle (Nodding Thistle). *Distr.*: VW—also N.Z.

### \**SILYBUM* Adans. (1763)

\**S. marianum* (L.) J. Gært. *Fruct. & Semin. Plant.* 2: 378, t. 162 (1791).

*Carduus marianus* L. *Spec. Plant.* 2: 823 (1753).

*Illust.*: Gærtner (*l.c.*); Leigh & Mulham, *Pastoral Plants Riverine Plain* 140, col. (1965); Black, *Flor. S. Aust.* ed. 2: t. 1240 (1957); Richardson, *J. Dep. Agric. S. Aust.* 56: 129 & 130 (1952); Adams in Connor, *Bull. Dep. sci. industr. Res., N.Z.* 99: fig. 29 (1951); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 131 (1949), as *Carduus marianus*; Abrams, *Ill. Flor. Pacific States* 4: fig. 3896 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 615 & 616 (1928); Burbidge, *Flor. Aust. Cap. Terr.* fig. 394 (1970).

*Vern.*: Variegated Thistle (Spotted Thistle Milk Thistle). *Distr.*: BCDEJKMN PRTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

### \**ONOPORDUM* L. (1753)

1. Plant *stemless*, the globular heads (1-2" diam.) *sessile* at centre of the white-tomentose rosette of large radical leaves; bracts glabrous; florets *white*; pappus 4-5 times as long as achene (frequent on sandy tracts of N.W. Mallee):

\**O. acaulon* L. *Spec. Plant.* ed. 2, 2: 1159 (1763).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 137 (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1242 (1957); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1551, col. (1923), as *Onopordon acaule*.

*Vern.*: Stemless Onopordum. *Distr.*: ABCFH—also S.A., N.S.W.

—Plant white-woolly, erect, with leafy stems (to 3 ft. tall) bearing prominent decurrent spiny wings; heads *pedunculate*; florets *purple*; pappus <4 times as long as achene

2. Involucral bracts *yellow*, <3 mm. wide, *long-pointed*, *woolly* in lower part, *only the outermost reflexed*; spines on the winged peduncles pale yellow, 6-10 mm. long (scattered on flat pastoral country from Port Fairy to Maffra, also northward to Graytown and Omeo districts):

\**O. acanthium* L. *Spec. Plant.* 2: 827 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1241 (1957); Ross-Craig, *Drawings Brit. Plants* 17: t. 17 A & B (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1310 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5897 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: t. 272 fig. 1, col. (1928); Burbidge, *Flor. Aust. Cap. Terr.* fig. 393 (1970).

*Vern.*: Heraldic Thistle (Scotch Thistle, Cotton Thistle). *Distr.*: EKMNSTW—also S.A., Tas., N.S.W., A.C.T.

—Involucral bracts  $\pm$  *reddish-purple*, >4 mm. wide, *short-pointed*, *glabrous* or nearly so, all but the innermost *strongly reflexed*; spines on the winged peduncles dark,  $\pm$  5 mm. long (occasional in Clunes-Maryborough, Mangalore and Rutherglen-Chiltern districts):

\**O. illyricum* L. *Spec. Plant.* 2: 827 (1753).

*Illust.*: Poinsoit in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1552 b, col. (1923); Javorka & Csapody, *Icon. Flor. Hungar.* 543 (1933); Coste, *Flor. Franc.* 2: fig. 1999 (1903); Reichenbach, *Icon. Flor. germ.* 15: t. 814 fig. 1, col. (1853).

*Vern.*: Illyrian Thistle. *Distr.*: JMR—also N.S.W.

[The Turkish *O. tauricum* Willd. *Spec. Plant.* 3: 1687 (1803) has been known from a very small infestation near Goroke since 1913, but has not spread beyond about  $\frac{1}{2}$  acre during the past 50 years. This erect plant is *not* white-woolly as in the preceding species but is everywhere covered with a sparse minute *glandular indumentum*, its less dissected foliage appearing green; none of the narrow-lanceolate involucral bracts (to 3 cm. long) are reflexed. It is figured by Turrill in *Hooker's Icon. Plant.* 32: t. 3156 (1932).

Persian *O. leptolepis* DC. *Prodr.* 6: 619 (1837) appeared recently at Eaglehawk, and is to be distinguished by the *appressed* (never reflexed) lower involucral bracts and *plumose* pappus-bristles; it is doubtful whether this cottony biennial has become firmly established in Victoria.]

#### CENTAUREA L. (1753)

1. Involucral bracts *blunt*, either scarious, lacerated or fringed at the summit, but *never spiny*; florets purplish 5  
Involucral bracts ending in *stiff spiny appendages* 2
2. Florets *pink to purple*; leaves all *deeply pinnatisect*, their bases *not* noticeably decurrent; heads in wide spreading *leafy panicles* 4  
Florets *yellow*; pappus present; upper leaves *entire*, their bases *decurrent along stem* in narrow,  $\pm$  sinuous wings; heads *solitary or few* on branches; involucre 10-15 mm. long 3
3. Plant *scabrid-pubescent*; involucral bracts with a relatively *short reddish*



*spine* and lateral spinules *pinnately arranged*, the innermost bracts with *pointed apices*; achenes *longer* than pappus (frequent in open pastoral country throughout State, but not in alps):

**\*C. melitensis L. Spec. Plant. 2: 917 (1753).**

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1244 (1957); Wills in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 103 (1958), also in Maiden, *Weeds N.S.W.* 115 (1920) and in *Agric. Gaz. N.S.W.* 6: t. opp. 151 (1895); Abrams, *Ill. Flor. Pacific States* 4: fig. 5949 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 674 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1589, col. (1923).

*Vern.*: Malta Thistle (Cockspur Thistle). *Dist.*: ABCDEFGHJKMNPSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

—Plant whitish-cottony; involucre bracts ending in a *long spreading yellow spine* (15-20 mm. long) with 4-6 *palmately arranged* spinules at its base, the innermost bracts with crenulate *orbicular tips*; achenes much *shorter* than pappus (scattered on flat open country of W., N. & N.E., from Hamilton to Myrtleford):

**\*C. solstitialis L. Spec. Plant. 2: 917 (1753).**

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1243 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 131 (1949); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 31, col. (1958); Maiden, *Weeds N.S.W.* t. opp. 118, col. (1920); Butcher, *New ill. Brit. Flor.* 2: fig. 1318 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5950 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 668 a, 671-73 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1590, col. (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 395 A (1970).

*Vern.*: St. Barnaby's Thistle (Yellow Star Thistle). *Dist.*: DHMR—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

4. Bracts of the star-like involucre *horny*, each with a *very long spreading terminal spine* (15-20 mm.) and 2-4 small lateral spinules at its base; *florets purple*; pappus *absent*; lower leaves *pinnatipartite*, 4-6" long (frequent, troublesome, occasionally stoloniferous weed of open country, but not in alps):

**\*C. calcitrapa L. Spec. Plant. 2: 917 (1753).**

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1245, also 1148 q (1957); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) fig. 102 (1958), also in Maiden, *Weeds N.S.W.* 111 (1920); Ross-Craig, *Drawings Brit. Plants* 17: t. 25 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1317 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5941 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: t. 272 fig. 3, col. (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1593, col. (1923).

*Vern.*: Star Thistle. *Dist.*: BCDEHJMNPRSVW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Bracts of involucre with a *short erect spine* (2-3 mm. long) and several lateral spinules arranged *pinnately* on each side; *florets pink*; pappus of *white bristles*  $\pm$  half as long as achene; lower leaves <4" long (N.E., in Beechworth & Myrtleford districts):

\**C. paniculata* L. *Spec. Plant.* 2: 912 (1753).

*Illust.*: Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1596, col. (1923); Coste, *Flor. Franc.* 2: fig. 2088 (1903); Reichenbach, *Icon. Flor. germ.* 15: t. 780 fig. II, col. (1852).

*Vern.*: Panicked Knapweed. *Distr.*: R.

5. Leaves mostly *entire* or almost so; involucre  $\pm$  15 mm. long, the bracts fringed with *brown to blackish comb-like appendages* that conceal the bases of successive inner bracts; pappus *minute*, much shorter than achene (occasional perennial from Eltham & Dandenong Ranges through N. Gippsland to Sale district):

\**C. nigra* L. *Spec. Plant.* 2: 911 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 17: t. 22 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1315 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5947 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 646 & 647 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1600 c, col. (1923); Coste, *Flor. Franc.* 2: fig. 2073 (1903); Reichenbach, *Icon. Flor. germ.* 15: t. 761 fig. II, col. (1852).

*Vern.*: Black Knapweed. *Distr.*: NTX—also S.A., Tas., N.Z.

—Leaves mostly *toothed or lobed*; involucre either <14 mm. or >25 mm. long, the scarious bracts *entire* or torn but *not fringed*; pappus *conspicuous*

6. Lower leaves 2-6" long; heads 1-2" long, *solitary on a long naked peduncle*, the bracts *all rounded* at summit; achenes with a projecting border beneath insertion of pappus (indigenous on grassland at Lake Omeo and Murrindal R. near Buchan, but extremely rare and perhaps now extinct):

*C. australis* (Cass.) Benth. & Hook. f. *Gen. Plant.* 2: 479 (1873).

*Leuzea australis* Cass. in Freyc. *Voy. aut. Monde (Bot.)* 462, t. 92 (1829).

*Illust.*: Cassini (*l.c.*); Payne in Bailey, *Weeds & susp. poison. Plants Qd* fig. 167 (1906).

*Vern.*: Austral Cornflower. *Distr.*: ? VW—also N.S.W., Qd.

—Lower leaves mostly <2" long; heads <1" long (mostly <14 mm.), pale yellowish, *scattered on short leafy branchlets*, the innermost bracts *pointed* and  $\pm$  woolly at summit (often perennial weed with creeping rootstock, widespread in N.W., Goulburn Valley, Benalla & Thoona districts):

\**C. repens* L. *Spec. Plant.* ed. 2, 2: 1293 (1763).

*Illust.*: Richardson, *J. Dep. Agric. S. Aust.* 56: 538 (1953); White, *Qd agric. J.* 44: 703 (1935); Blakely, *Agric. Gaz. N.S.W.* 35: 420 (1924), as *C. picris*; Abrams, *Ill. Flor. Pacific States* 4: fig. 5939 (1960); *J. N.Z. Dep. Agric.* 10: 443 (1915)—achenes, as *C. picris*.

*Vern.*: Creeping Knapweed (Russian Knapweed). *Distr.*: ABCFGHMR—also S.A., N.S.W.

[According to Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust. (ed. 2):* 328 (1965), this species should be referred to the genus *Acroptilon*, as *A. repens* (L.) DC.

The annual Cornflower (*C. cyanus* L.), in a variety of blues and pinks, also perennial Greater Knapweed (*C. scabiosa* L.) have been noted as occasional garden escapes, the latter in Portland district, but neither of these European herbs can be regarded as truly naturalized. The former has cottony, narrow-linear, almost entire leaves, the latter pinnatisect foliage, and both have fringed involucre bracts.]

\**CARTHAMUS* L. (1753)

1. Leaves and bracts *ovate-oblong*, with obscurely *denticulate* or almost *entire margins*; florets conspicuous, *vivid orange-scarlet*; achenes obovoid, white, glossy (occasional escape from cultivation chiefly in Wimmera and E. Gippsland):

\**C. tinctorius* L. *Spec. Plant.* 2: 830 (1753).

*Illust.*: Abrams, *Ill. Flor. Pacific States* 4: fig. 5900 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 676 (1928); Gagnepain in Lecomte, *Flor. gén. Indo-Chine* 3: 495 (1924); Javorka & Csapody, *Icon. Flor. Hungar.* 551 (1933); Basu, *Ind. med. Plants* t. 555 (1918); Hoffmann in Engler & Prantl, *Natürl. PflFam.* IV 5: 331 fig. 150 (1894); Reichenbach, *Icon. Flor. germ.* 15: t. 746 fig. 1, col. (1852); Baillon, *Hist. Plant.* 8: 10 fig. 14 (1886).

*Vern.*: Safflower. *Distr.*: CDNZ (sporadic)—also N.S.W.

—Leaves and bracts *lanceolate*, coarsely sinuate-toothed, with *stout marginal spines* (4-10 mm. long) and a long terminal spine; florets *never reddish*; achenes  $\pm$  4-angled, curved and pitted near attachment

2

2. Florets *yellow or greenish*; involucre  $\pm$  20 mm. long, the bracts  $\pm$  *arachnoid* at base; achenes 5-6 mm. long, *dark*, often *wrinkled* towards truncate summit (widespread weed of open country throughout W. N.W. & N.):

\**C. lanatus* L. *Spec. Plant.* 2: 830 (1753).

*Illust.*: Mears, *Agric. Gaz. N.S.W.* 79: 371 (1968); Gardner in Meadly, *Weeds W. Aust.* 160 col., 162 (1965), also in *J. Dep. Agric. W. Aust.* ser. 3, 6: t. opp. 196 col., 198 (1957); Black, *Flor. S. Aust.* ed. 2: fig. 1246 (1957); King in Whittet, *Weeds (N.S.W. Dep. Agric.)* fig. 101 (1958); Abrams, *Ill. Flor. Pacific States* 4: fig. 5898 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 678 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1611, col. (1923), as *Kentrophyllum lanatum*; Curtis's *bot. Mag.* 47: t. 2142, col. (1820); Burbidge, *Flor. Aust. Cap. Terr.* fig. 396 (1970).

*Vern.*: Saffron Thistle. *Distr.*: ABCEFGHJKMNR—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Florets *purplish*; involucre 10-15 mm. long, the bracts *never arachnoid*; achenes 3-4 mm. long, *pallid*, *smooth* (scattered through W., from Edenhope to Meredith):

\**C. glaucus* Bieberst. *Flor. Taur.-Caucas.* 2: 284 (1808).

*Illust.*: Cheel, *Agric. Gaz. N.S.W.* 37: 543 (1926); Bouloumoy, *Flor. Liban & Syrie* t. 236 (1930).

*Vern.*: Glaucous Star-thistle. *Distr.*: CDN—also S.A., N.S.W.

[Representatives of two other genera (each monotypic) in the tribe *Cynareæ* have appeared spontaneously in Victoria, viz. *Cnicus benedictus* L. (Blessed Thistle) and *Microlonchus salmanticus* (L.) DC., both from Mediterranean regions. The former, accepted as naturalized in Ewart's *Flor. Vict.* 1189 (1931), was noted in the Wangaratta and Springhurst districts between 1904 and 1916; but it has not been collected again during the past 50 years and is now presumed to have died out. Affinities are with *Carthamus*, and the foliage is very similar to that of *C. tinctorius*, although more prickly; but yellow-flowered *Cnicus* differs in having *strongly ribbed achenes* (obliquely hollowed at base) and a *double pappus*—a ring of 10-11 long bristles surrounding 10 much shorter ones inside. *Microlonchus*, found at Myrtleford in 1955, is not known to have persisted there but is naturalized on the Darling Downs, Queensland. It is much branched, almost leafless and cane-like at the flowering stage, with smooth globoid heads on long naked peduncles; the tightly appressed, blunt involucre bracts are quite unarmed and distally edged in purple, while the pappus-bristles are long and white. *Microlonchus* differs from *Centaurea*, with which formerly included, in having ribbed and *trabeculate* achenes.]

## Tribe CICHORIÆ

### \*SCOLYMUS L. (1753)

\**S. hispanicus* L. *Spec. Plant.* 2: 813 (1753).

*Illust.*: Knight in Parsons, *J. Dep. Agric. Vict.* 56: 592-93, col. (1958); Koppel, *Flor. Israel* t. [93] (1952); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 7: fig. 1758, col. (1924); Javorka & Csapody, *Icon. Flor. Hungar.* 551 (1933); Thompson, *Flowering Plants Riviera* t. 18 (1914); Coste, *Flor. Franc.* 2: fig. 2119 (1903); Reichenbach, *Icon. Flor. germ.* 19: t. 1352, col. (1858).

*Vern.*: Golden Thistle. *Distr.*: HJM.

### \*CICHORIUM L. (1753)

\**C. intybus* L. *Spec. Plant.* 2: 813 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1247 (1957); Everist, *Qd agric. J.* 82: 609 (1956); anon., *Qd agric. J.* new ser. 3: 256 & 257 (1915), also in *J. Dep. Agric. Vict.* 17: 114 & 115 (1919); Ross-Craig, *Drawings Brit. Plants* 17: t. 26 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1320 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 5956 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: t. 273 fig. 4, col. (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1635, col. (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 397 (1970); Everard, *Wild Flowers World* t. 22 fig. D, col. (1970).

*Vern.*: Chicory. *Distr.*: ACDEFHJKMNRTW—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

## MICROSERIS D. Don (1832)

*M. scapigera* (Soland. ex A. Cunn.) Schult.-Bip. in *Pollichia* 22-24: 309 (1866).

*Scorzonera scapigera* Soland. ex A. Cunn. in *Ann. nat. Hist.* 2: 125 (1839).

*Illust.*: Cochrane, Fuhrer, Rotherham & Willis, *Flowers & Plants Vict.* t. 348, col. (1968); Hösel, *Wildflowers S.-E. Aust.* 34, col. (1969); Mass, *Flowers aust. Alps* 15 (1967); Baglin in Murray, *Alpine Flowers Kosciusko State Park* t. 15, col. (1962), as *M. lanceolata*; Black, *Flor. S. Aust.* ed. 2: fig. 1248 (1957), as *M. lanceolata*; Fitch in Hooker f., *Flor. Tasm.* 1: t. 66, col. (1857), as *M. Forsteri*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 398 (1970); Ashby, *S. Aust. Mus. Wild Flower Post Card* n. 142, col. (1971).

*Vern.*: Yam-daisy (Yam, Murrnong—aborig.). *Distr.*: ABCDEHJKMNPRST VWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

## \*TOLPIS Adans. (1763)

\**T. umbellata* Bertol. in *Mem. Soc. med. Emul. Genova* 2: 133 (1803).

*Illust.*: Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Burbidge, *Flor. Aust. Cap. Terr.* fig. 399 (1970).

*Vern.*: Tolpis (Yellow Hawkweed). *Distr.*: CDNPRSV—also S.A., Tas., N.S.W., A.C.T., N.Z.

## \*HEDYPTHOIS Schreb. (1791)

\**H. cretica* (L.) Willd. *Spec. Plant.* 3: 1617 (1803).

*Hyoseris cretica* L. *Spec. Plant.* 2: 810 (1753).

*Illust.*: Leigh & Mulham, *Pastoral Plants Riverine Plain* 127, col. (1965); Black, *Flor. S. Aust.* ed. 2: fig. 1249 (1957); Abrams, *Ill. Flor. Pacific States* 4: fig. 6019 (1960); Post & Dinsmore, *Flor. Syria, Palestine & Sinai* ed. 2, 2: 126 (1933); Javorka & Csapody, *Icon. Flor. Hungar.* 552 (1933); Poinsoot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1638, col. (1923), as *H. polymorpha*.

*Vern.*: Cretan Hedypnois. *Distr.*: ABCJMNPR—also S.A., Tas., N.S.W.

[Some authors prefer to relegate *H. cretica* to subspecific rank under *H. rhagadioloides* (L.) Willd., as subsp. *cretica* (L.) Hayek (1931), and in Hj. Eichler's *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 328 (1965) the name *H. rhagadioloides* has been adopted for South Australian populations.]

## \*HYPOCHÆRIS L. (1753)

Plant *perennial*; leaves manifestly *hispid*; scapes distinctly *enlarged* below the heads; involucre 10-25 mm. long, *shorter than* florets; achenes *orange*, usually *all long-beaked* (abundant throughout State, from Mallee and sea-coast to alps);

\**H. radicata* L. *Spec. Plant.* 2: 811 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 250 (1957); *Honey Flor. Vict.* (Dep. Agric.) ed. 5: 128 (1949); Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 36, col. (1958); Maiden, *Weeds N.S.W.* t. opp. 124, col. (1920), also in *Agric. Gaz. N.S.W.* 28: t. opp. 48, col. (1917); *J. N.Z. Dep. Agric.* 11: 116, 118, 223 (1915); Ross-Craig, *Drawings Brit. Plants* 18: t. 21 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1324 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6018 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: t. 274 fig. 4, col. (1928); Burbidge, *Flor. Aust. Cap. Terr.* fig. 405 (1970).

*Vern.*: Cat's-ear (Flat-weed). *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

Plant *annual*; leaves *almost glabrous*; scapes *not* noticeably enlarged below heads; involucre 8-15 mm. long, about *as long as* florets; achenes dull *reddish-brown*, the outermost chiefly *without beaks* (widespread and frequent in W., N.W. & Cent., less so in N.E. and apparently absent from E. Gippsland):

\**H. glabra* L. *Spec. Plant.* 2: 811 (1753).

*Illust.*: Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Bailey, *Weeds & susp. poison. Plants Qd* fig. 172 (1906); Ross-Craig, *Drawings Brit. Plants* 18: t. 22 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1323 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6017 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 704 (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1647, col. (1923).

*Vern.*: Smooth Cat's-ear. *Distr.*: ABCDEFGHJMNPRTV—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

\*LEONTODON L. (1753)

\**L. taraxacoides* (Vill.) Mérat in *Ann. Sci. nat. sér.* 1, 22: 108 (1831).

*Hyoseris taraxacoides* Vill. *Prosp. Hist. Plant. Dauph.* 33 (1779);

*L. hirtus* sens. Ewart *Flor. Vict.* 1197 (1931), non L. (1758).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1253 (1957), as *L. Leysseri*; Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Ross-Craig, *Drawings Brit. Plants* 18: t. 26 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1328 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6021 (1960), as *L. leysseri*; Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 722 (1928), as *L. nudicaulis* subsp.

*Vern.*: Hairy Hawkbit. *Distr.*: AJKLMNPSTZ—also S.A., Tas., N.Z.

[This taxon is sometimes treated as a subspecies of *L. nudicaulis* Banks ex Lowe.]

\*UROSPERMUM Scop. (1777)

\**U. picroides* (L.) F. W. Schmidt *Samml. phys.-ökonom. Aufsätze* 1: 275 (1795).

*Tragopogon picroides* L. *Spec. Plant.* 2: 790 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1251 (1957); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1662, col. (1923); Coste, *Flor. Franc.* 2: fig.

2152 (1903); Fiori & Paoletti, *Icon. Flor. Ital.* 461 (1904); Reichenbach, *Icon. Flor. germ.* 19: t. 1377 fig. II-IV, col. (1858).

*Vern.*: Urospermum. *Distr.*: C (Mt. Arapiles)—also S.A.

### PICRIS L. (1753)

Leaves *broad-lanceolate*, almost *spinulose* with scattered *coarse bristles on white tuberculate bases*; involucre 10-15 mm. wide, with 3-5 broad *leaf-like, ovate-cordate, bristly-ciliate outer bracts* almost as long as the narrower inner series; achene with *slender beak* as long as itself (stout, much branching annual weed, widespread in lowlands of W., N.W., Cent. and nearer N.E., also Lakes Entrance):

\**P. echioides* L. *Spec. Plant.* 2: 792 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1255 (1957); Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Davey, *J. Dep. Agric. Vict.* 20: 167 (1922); Ross-Craig, *Drawings Brit. Plants* 17: t. 29 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1329 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6020 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 727 (1928); Poinso in Bonnier, *Flor. Franc., Suisse & Belg.* 6: fig. 1660, col. (1923), as *Helminthia echioides*.

*Vern.*: Ox-tongue. *Distr.*: CDGHJKLMNRW—also S.A., Tas., N.S.W., ? A.C.T.

Leaves *narrowly oblanceolate to linear*, hispid, *without tubercle-based bristles*; involucre  $\pm$  10 mm. wide, the *narrow-lanceolate bracts* in  $\pm$  3 unequal series and outermost *never leaf-like or cordate*; achene tapering into a *very short beak* (frequent throughout alps and subalps of E. highlands, but rare and scattered in W.—e.g. at Creswick and Mt. Eccles):

\**P. hieracioides* L. *Spec. Plant.* 2: 792 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1254 (1957); Ross-Craig, *Drawings Brit. Plants* 17: t. 30 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1330 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: t. 275 fig. 3, col. (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1659, col. (1923); Coste, *Flor. Franc.* 2: fig. 2148 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 407 (1970).

*Vern.*: Hawkweed Picris. *Distr.*: AEJNRSTVWZ—also S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[The var. *squarrosa* (Steetz, *ut sp.*) Benth. *Flor. aust.* 3: 378 (1867) differs in its more hispid stems and foliage, rather larger heads (to 15 mm. long) and more numerous, *very spreading or recurved* outer bracts. It occurs on sandy banks of the Murray R. near Mildura, also along South Australian coasts, and is probably indigenous.]

### \*TRAGOPOGON L. (1753)

\**T. porrifolius* L. *Spec. Plant.* 2: 789 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1252 (1957); Bailey, *Weeds & susp. poison. Plants* Qd fig. 176 (1906); Butcher, *New ill. Brit. Flor.* 2: fig. 1333 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6014 (1960); Bailey, *Standard Cycl. Hort.* 3: fig. 3832 (1935); Bostelmann in Boswell, *Natn. geogr. Mag.* 96: 182,

col. (Aug. 1949); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: fig. 728 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1673, col. (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 406 (1970).

*Vern.*: Salsify (Oyster Plant). *Distr.*: ABDGJKMNPSTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

### \*SCORZONERA L. (1753)

\**S. laciniata* L. *Spec. Plant.* 2: 791 (1753).

*Illust.*: Andrew, *J. Dep. Agric. S. Aust.* 20: 557 (1917); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: fig. 755 (1928), as *Podospermum laciniatum*; Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1670, col. (1923), as *P. laciniatum*; Coste, *Flor. Franc.* 2: fig. 2160 (1903), as *P. laciniatum*; Fiori & Paoletti, *Icon. Flor. Ital.* 462 (1904); Reichenbach, *Icon. Flor. germ.* 19: t. 1386 fig. I, col. (1858), as *P. laciniatum*.

*Vern.*: Scorzonera. *Distr.*: BCFGHLM—also S.A.

[The var. *calcitrapifolia* (Vahl, *ut sp.*) Bisch. ex Boiss. *Flor. orient.* 3: 757 (1875) differs from the typical form (with linear leaf-segments) in having the lobes of the leaves broadly oblong-elliptic to obovate, with wider rhachis and manifestly larger terminal segment (reminiscent of water-cress). It is figured in Hegi's *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: 756 (1928), as *Podospermum calcitrapifolium*. Hj. Eichler, *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 329 (1965), has referred *S. laciniata* to the genus *Podospermum*, as *P. laciniatum* (L.) DC. *Flor. franc.* ed. 3, 4: 62 (1805).]

### \*CHONDRILLA L. (1753)

\**C. juncea* L. *Spec. Plant.* 2: 796 (1753).

*Illust.*: Gardner in Meadly, *Weeds W. Aust.* 163-66, col., 167 (1965), also in *J. Dep. Agric. W. Aust.* ser. 4, 4: 701 & 702 col., 704 (1963); O'Neil, *J. Dep. Agric. S. Aust.* 65: 18-21, also 15 map (1961); King in Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 32 col., also fig. 3 & 104 (1958); *J. Dep. Agric. Vict.*, 63: 276, col. (1965); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: t. 276 fig. 1, col. (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1675, col. (1923); Coste, *Flor. Franc.* 2: fig. 2167 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 404 (1970).

*Vern.*: Skeleton Weed. *Distr.*: ABCFHJMNRUVW—also S.A., Tas., N.S.W., A.C.T.

### TARAXACUM Weber (1780)

Leaf-lobes pointed, mostly 6-15 mm. long; outer involucre bracts narrow-lanceolate to linear, spreading or even reflexed, usually >5 mm. long; achene with very slender beak >twice and up to four times its length, usually strongly muricate in upper half (almost throughout State, ascending to subalps and more frequent in moister cooler districts):

\**T. officinale* sp. agg.

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1256 (1957); Ewart, *Flor. Vict.* fig. 349 (1931); Ross-Craig, *Drawings Brit. Plants* 18: t. 27 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1370 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6064



(1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 277 fig. 1, col. (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1678, col. (1923); Coste, *Flor. Franc.* 2: fig. 2170 (1903); Burbidge, *Flor. Aust. Cap. Terr.* fig. 400 (1970). *Vern.*: Dandelion. *Distr.*: ADEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, N.Z.

[The genus *Taraxacum* is apomictic, and no attempt has yet been made to deal taxonomically with Australian populations that are at present included under *T. officinale*. It is quite uncertain whether *T. officinale* Weber in Wiggers *Primit. Flor. Holsat.* 56 (1780), *sens. strict.*, occurs anywhere in the Commonwealth.]

Leaf-lobes *rounded and obtuse*, 4-5 mm. long; outer involuclral bracts *ovate-lanceolate, appressed*, 4-5 mm. long; achene with slender beak about twice its length, *very shortly* muricate near apex only (apparently indigenous on Bogong High Plains at  $\pm$  5600 ft. alt., also Brisbane Ranges, but precise distribution not yet investigated):

*T. aristum* G. Haglund & G. Marklund in *Bot. Notiser* 117<sup>2</sup>: 197, fig. in 198 & 199 (1964).

*Illust.*: Haglund & Marklund (*l.c.*).

*Vern.*: Austral Dandelion. *Distr.*: NV—also A.C.T.

### SONCHUS L. (1753)

1. Foliage *dull, thin*,  $\pm$  flaccid, runcinately lobed; stem-leaves with *acute auricles*, the margins often sharply toothed but hardly spinulose; achenes slightly compressed, *narrowly margined*, 3-ribbed on each face and *transversely rugose all over* (frequent annual weed almost throughout State, but not in alps):

\**S. oleraceus* L. *Spec. Plant.* 2: 794 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1258 (1957); Whittet, *Weeds* (N.S.W. Dep. Agric.) tt. 20 & 41, col. (1958); Maiden, *Weeds N.S.W.* t. opp. 128 (1920); Ross-Craig, *Drawings Brit. Plants* 18: t. 38 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1342 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6023 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 277 fig. 3, col. (1928); Poinso in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1689, col. (1923); Burbidge, *Flor. Aust. Cap. Terr.* fig. 401 (1970).

*Vern.*: Sow Thistle. *Distr.*: ABCDEFGHJKLMNPRSTUVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

—Foliage  $\pm$  *glossy, thickish*, stiff, sometimes undivided; stem-leaves with *rounded auricles*, the margins usually crisped and *spinous-toothed*; achenes much compressed, *broadly margined*, longitudinally 3-ribbed on each face but otherwise *smooth*

2. Plant *annual or biennial*, with a taproot; involucre 10-15 mm. long, the tips of inner bracts *entire* and  $<1$  mm. wide; achenes  $2.5-3 \times 1.1-1.5$  mm (frequent and co-extensive with *S. oleraceus*):

\**S. asper* (L.) Hill *Herb. brit.* 1: 47, t. 34 (1769).

*S. oleraceus* L. var. *asper* L. *Spec. Plant.* 1: 794 (1753).

*Illust.*: Hill (l.c.); M. E. R. in Allan, *Bull. Dep. sci. industr. Res., N.Z.* 83: fig. 72 b (1940); Ross-Craig, *Drawings Brit. Plants* 18: t. 39 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1343 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6025 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig. 789 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1690, col. (1923).

*Vern.*: Rough or Prickly Sow Thistle. *Distr.*: ABCDEHJKMNPRSTVWZ—also W.A., S.A., Tas., N.S.W., A.C.T., N.Z.

—Plant *perennial*, with thick stolon-bearing rootstock; involucre 15-20 mm. long, the tips of inner bracts  $\pm$  *ciliate*, rounded and 1 mm. wide or more; achenes  $6\text{--}7 \times 1\cdot5\text{--}2\cdot5$  mm. (indigenous on coastal dunes and cliffs, from Lower Glenelg R. to Lakes Entrance):

*S. megalocarpus* (Hook. f.) J. M. Black *Flor. S. Aust.* 661 (1929).

*S. asper* (L.) Hill var. *megalocarpa* Hook. f. *Flor. Tasm.* 1: 227 (1856).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1259 (1957).

*Vern.*: Dune Thistle. *Distr.*: EKNPTW—also W.A., S.A., Tas., N.S.W.

[In Hj. Eichler's *Suppl. J. M. Black's Flor. S. Aust.* (ed. 2): 332-33 (1965), Dr. Loutfy Boulos of Cairo has described a new genus, *Embergeria*, based on the New Zealand species *Sonchus grandifolius* T. Kirk. To this genus he has also assigned the Australian *S. megalocarpus*, making the required new combination *E. megalocarpa* (Hook. f.) Boulos. The characters purporting to distinguish *Embergeria* from *Sonchus*, viz. coriaceous texture of leaves and larger dimensions of achenes, do not impress one as adequate, and in the present key *S. megalocarpus* is retained under *Sonchus*.

Eichler (l.c. 330-31) records for South Australia the additional species *S. arvensis* L. and *S. tenerrimus* L., both related to *S. oleraceus* but having relatively longer ligules to the ray florets, also *S. hydrophilus* Boulos—a near-coastal herb, closely related to *S. asper* but with larger pollen grains ( $45\text{--}49\ \mu$  diam.). Some of these taxa may be present in Victoria, but evidence to date is lacking.]

### \*LACTUCA L. (1753)

Stem-leaves *broadly oblong*,  $>10$  mm. wide,  $\pm$  *glaucous* and glabrous but closely *spinulose* on the midribs and edges (which tend to *orient themselves north and south* with respect to stem—hence the occasional sobriquet of “compass plant”); involucre 8-12 mm. long; achene *grey-brownish*,  $\pm 3$  mm. long, about the *same length* as beak (biennial weed scattered through W., N.W., Goulburn Valley, N.E., Melbourne suburbs & E. Gippsland):

\**L. serriola* L. *Cent. II Plant.* 29 (1756).

*L. scariola* L. *Spec. Plant.* ed. 2, 2: 1119 (1763).

*Illust.*: Whittet, *Weeds* (N.S.W. Dep. Agric.) t. 38, col. (1958); Davey, *J. Dep. Agric. Vict.* 20: 228 & 229 (1922), as *L. scariola*; Ross-Craig, *Drawings Brit. Plants* 18: t. 31 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1335 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6029 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6\*: fig.

795 & 796 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1681, col. (1923), as *L. scariola*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 402 (1970).

*Vern.*: Prickly Lettuce. *Distr.*: ABCFHJKLMNRVWX—also W.A., S.A., Tas., N.S.W., A.C.T., Qd, Cent. Aust., N.Z.

Stem-leaves *linear* (but with sagittate bases), <5 mm. wide, green, the midribs and edges *unarmed*; involucre 12-15 mm. long; achene *blackish*, 5-7 mm. long, much *shorter* than beak (occasional biennial in W., N.W., Murray & Goulburn Valleys, Morwell & Swift's Creek districts):

\**L. saligna* L. *Spec. Plant.* 2: 796 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1257 (1957); Beunier in Everist, *Qd agric. J.* 82: 610 (1956); Ross-Craig, *Drawings Brit. Plants* 18: t. 33 (1963); Butcher, *New ill. Brit. Flor.* 2: fig. 1337 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6030 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 803 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1680, col. (1923).

*Vern.*: Willow-leaf Lettuce (Wild Lettuce, Least Lettuce). *Distr.*: BCDHJKLN PRTW—also W.A., S.A., Tas., N.S.W., A.C.T., Qd.

[*L. sativa* L. is the annual Garden Lettuce, with many cultivated races. Young plants may occasionally appear on waste ground adjoining lettuce crops that have been allowed to run to seed.]

#### \*CREPIS L. (1753)

1. Achenes 1.5-2.5 mm. long, narrowed upwards but *not beaked*; involucre 5-8 mm. long, shortly downy and with some glandular hairs; stem-leaves lanceolate, sessile and with conspicuous *sagittate auriculate bases* (locally frequent in E. highlands, from the Dandenongs to Omeo district, also at Mt. Macedon and in E. Gippsland):

\**C. capillaris* (L.) Wallr. *Erst. Beitr. Flor. Hercyn.* 287 (1840).

*Lapsana capillaris* L. *Spec. Plant.* 2: 812 (1753).

*Illust.*: Black, *Flor. S. Aust.* ed. 2: fig. 1260 (1957); Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Ross-Craig, *Drawings Brit. Plants* 17: t. 34 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1368 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6050 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>a</sup>: fig. 839 e-h, 845 (1928); Poinset in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1718, col. (1923), as *C. virens*; Burbidge, *Flor. Aust. Cap. Terr.* fig. 403 (1970).

*Vern.*: Smooth Hawksbeard. *Distr.*: NRSVZ—also S.A., Tas., N.S.W., A.C.T., N.Z.

—Achenes 3-5 mm. long, tapering into a *distinct beak* at least half as long as achene; involucre 8-13 mm. long

2. Heads <15 mm. diam.; involucre 8-10 mm. long, beset with *stiff yellowish bristles* (1-2 mm. long) which extend onto peduncle; fruiting pappus *not* or hardly exceeding the involucre (hills of far N.E. from Myrtleford to Harrietville, also Ballarat):

\**C. setosa* Halle. f. in Rœm. Arch. Bot. 1<sup>2</sup>: 1 (1796-97).

*Illust.*: Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 71 (? 1962); Abrams, *Ill. Flor. Pacific States* 4: fig. 6051 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: fig. 847 & 848 (1928); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1698, col. (1923), as *Barkhausia setosa*; Coste, *Flor. Franc.* 2: fig. 2205 (1903); Reichenbach, *Icon. Flor. germ.* 19: t. 1435 fig. I, col. (1859).

*Vern.*: Bristly Hawksbeard. *Distr.*: JRV—also Tas., N.S.W., N.Z.

—Heads 15-20 mm. diam.; involucre downy and  $\pm$  glandular but *without bristles*; fruiting pappus conspicuously *longer* than involucre 3

3. Peduncles very long, distinctly *bracteolate* under the heads which are  $\pm$  *nodding* when in bud stage; achenes 3-4 mm. long, the marginal series *shortly beaked* and *clasped* by the inner phyllaries, the central ones with beaks *longer than* achene (scattered through W., central and nearer N.E. lowlands, from Casterton to Dookie):

\**C. foetida* L. *Spec. Plant.* 2: 807 (1753).

*Illust.*: Ross-Craig, *Drawings Brit. Plants* 17: t. 31 (1962); Butcher, *New ill. Brit. Flor.* 2: fig. 1364 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: fig. 849 & 850 (1928); Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1703, col. (1923), as *Barkhausia foetida*; Coste, *Flor. Franc.* 2: fig. 2203 (1903); Reichenbach, *Icon. Flor. germ.* 19: t. 1434, col. (1859).

*Vern.*: Stinking Hawksbeard. *Distr.*: DMNRT—also W.A., S.A., N.S.W., A.C.T., N.Z.

—Peduncles *naked* below heads which are *always erect*; achenes 4-5 mm. long, the marginal ones *not* clasped or enclosed by phyllaries, the beaks of all *equal* and about *as long as* body of achene (rare, and known only from Coleraine, Hamilton and Freyerstown districts):

\**C. taraxacifolia* Thuill. *Flor. Paris* nouv. éd. 409 (1799).

*Illust.*: Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 71 (? 1962); Ross-Craig, *Drawings Brit. Plants* 17: t. 32 (1962), as *C. vesicaria* subsp. *taraxacoides*; Butcher, *New ill. Brit. Flor.* 2: fig. 1365 (1961); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>3</sup>: fig. 852 (1928), as *C. vesicaria* subsp. *taraxacifolia*; Poinot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1699, col. (1923), as *Barkhausia taraxacifolia*; Coste, *Flor. Franc.* 2: fig. 2204 (1903); Reichenbach, *Icon. Flor. germ.* 19: t. 1437 fig. I, col. (1859).

*Vern.*: Dandelion Hawksbeard. *Distr.*: DN—also S.A., N.Z.

[Ewart, *Flor. Vict.* 1197 (1931), records the Eurasian *C. tectorum* L. (Tall Crepis) as "widely spread in Victoria", but specimens of Victorian origin are lacking from the Melbourne Herbarium and it is most probable that the recording was based upon misidentified material of *C. capillaris* (which Ewart omits to mention). True *C. tectorum* differs in having leaves that are *narrowed* toward base, without any auricles, longer darker achenes and the inner phyllaries usually *hairy inside*.]

\*LAPSANA L. (1753)

\**L. communis* L. *Spec. Plant.* 2: 811 (1753)

*Illust.*: Healy, *Proc. Fifteenth N.Z. Weed Control Conference* 70 (? 1962); Ross-Craig, *Drawings Brit. Plants* 17: t. 28 (1962); Butcher, *New ill. Brit. Flor.* 2:

fig. 1321 (1961); Abrams, *Ill. Flor. Pacific States* 4: fig. 6069 (1960); Hegi, *Ill. Flor. Mittel-Eur.* 6<sup>1</sup>: t. 274 fig. 1, col. (1928); Poincot in Bonnier, *Flor. compl. Franc., Suisse & Belg.* 6: fig. 1644, col. (1923); Coste, *Flor. Franc.* 2: fig. 2123 (1903); Reichenbach, *Icon. Flor. germ.* 19: t. 1353 fig. II, col. (1858).  
*Vern.*: Nipplewort. *Distr.*: NRT—also Tas., N.S.W., N.Z.

\*REICHARDIA Roth (1787)

\**R. tingitana* (L.) Roth. *Bot. Abh. Beobacht.* 35 (1787).

*Scorzonera tingitana* L. *Spec. Plant.* 2: 791 (1753), non *S. picroides* L. l.c. 792 (1753).

*Illust.*: Post & Dinsmore, *Flor. Syria, Palestine & Sinai* ed. 2, 2: 151 (1933)—capitulum; Hoffmann in Engler, *Natürl. PflFam.* IV 5: 367 fig. 162 c (1893)—achene; Fiori & Paoletti, *Icon. Flor. Ital.* 466 (1904); *Curtis's bot. Mag.* 4: t. 142, col. (1791), as *Scorzonera tingitana*.

*Vern.*: Reichardia. *Distr.*: ABCFH—also S.A.

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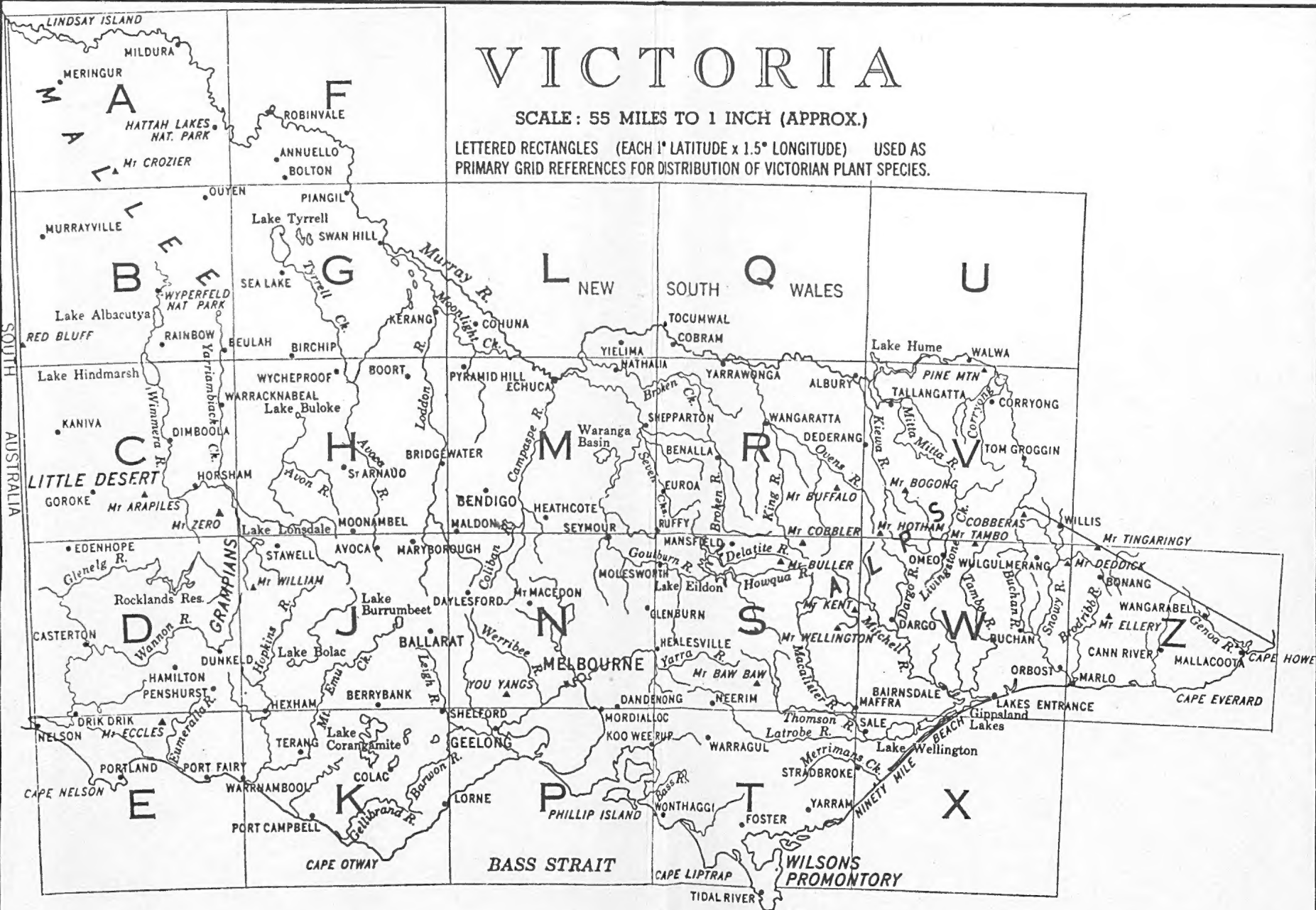




# VICTORIA

SCALE: 55 MILES TO 1 INCH (APPROX.)

LETTERED RECTANGLES (EACH 1° LATITUDE x 1.5° LONGITUDE) USED AS  
PRIMARY GRID REFERENCES FOR DISTRIBUTION OF VICTORIAN PLANT SPECIES.





inevitably be built on the firm foundation provided by the present handbook.

Volume II now completes the work. It covers all the dicotyledonous families, genera and species and it is self-contained with separate key and index. It has been widely used by hosts of professionals in botany, agriculture and forestry and by students, amateur botanists and conservationists. The work is one of meticulous scholarship; only those who have seen the beautifully handwritten manuscript can appreciate the quality and extent of the labour and research that have gone into it. The work is a fitting memorial to a man who must be regarded as the only true successor to the great Baron von Mueller.

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